THE DETERMINANTS OF DIVESTITURES AND DIVESTITURE RETURNS IN SOUTH AFRICA.

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DEPARTMENT OF FINANCE AND TAX

Minor Dissertation By:

Katlego Joseph Leepile

Student Number: LPLKAT002

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Supervisor: Mr A. Majoni

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ABSTRACT

This study investigates the determinants of divestitures, the impact of divestitures on short-term firm value and the determinants of divestiture returns in South Africa. The study is based on a sample of 46 non-financial firms listed on the Johannesburg Stock Exchange (JSE) between 2000 and 2014. Logit regressions found CEO Turnover, a measure of corporate focus and Return on Assets (ROA), a measure of corporate efficiency, to be the only statistically significant determinants of divestitures in South Africa. However, Sales growth, Return on Equity (ROE), Debt to Total Assets (D-t-A), Debt to Equity (D-t-E), the current ratio, and the interest coverage ratio did not possess statistical significance as determinants of divestitures in South Africa. The study also investigated the impact of divestitures on short-term shareholder wealth and found that divestitures have a statistically significant positive impact on short-term firm value in South Africa. Finally, the study also investigated the determinants of divestiture returns. The cross-sectional regression based on the full sample of divesting firms found that leverage has a statistically significant effect on divestiture returns in South Africa; however, firm size and efficiency do not have a statistically significant effect on divestiture returns. However, the study also separated the portfolio of divesting firms into subsamples to further understand the determinants of divestiture returns in South Africa. Analyses of subsamples reported that larger firms report superior abnormal returns than smaller firms, firms with lower levels of efficiency report superior abnormal returns than firms with higher levels of efficiency, and highly-levered firms report superior abnormal returns than lower-levered firms in South Africa.

Keywords: Divestitures, Event Study, Cumulative Abnormal Returns, South Africa.

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AAR	-	Average Abnormal Return
AR	-	Abnormal Return
BBBEE	-	Broad-Based Black Economic Empowerment
BHAR	-	Buy and Hold Return
CAR	-	Cumulative Abnormal Return
CEO	-	Chief Executive Officer
D-t-A	-	Debt to Assets
D-t-E	-	Debt to Equity
EBITDA	-	Earnings before Interest, Tax, Depreciation and Amortisation
JSE	-	Johannesburg Stock Exchange
Ln(TA)	-	Natural logarithm of Total Assets
M&A	-	Mergers and Acquisitions
OLS	-	Ordinary Least Squares
PBIT	-	Profit before Interest and Tax
ROA	-	Return on Assets
ROE	-	Return on Equity
ROS	-	Return on Sales
TA	-	Total Assets
TE	-	Total Equity
TL	-	Total Liabilities
UK	-	United Kingdom
US	-	United States of America

1. INTRODUCTION

1.1 Introduction to Divestitures

Brauer (2006) defines divestitures as adjustments to ownership and the firm's business portfolio structure (Lee & Madhavan, 2010). These adjustments can be completed via spin-offs, equity carve-outs, a split up or the complete sale of a firm's business units or assets (Comment & Jarrell, 1995; Desai & Jain, 1999; Markides, 1992).

Divestitures occur either voluntarily (voluntary divestitures) or through external pressures (involuntary divestitures). Voluntary divestitures are a predetermined decision taken by managers and shareholders of the firm (Søgaard & Nielsen, 2011). The decision would result in the firm making an announcement that it intends to transfer a portion of its resources in exchange for financial considerations (Alexander, Benson & Kampmeyer, 1984). In contrast, involuntary divestitures occur when the firm is forced to transfer ownership of its resources as a result of external pressures. External pressures may come in the form of changes in legislation that affect the operating environment in which the firm operates. External pressures may also be instituted by the firm's stakeholders during periods when the firm is unable to meet any financial obligations. However, Boudreaux (1975) argues that involuntary divestitures do not possess the same benefits to shareholder wealth as those of voluntary divestitures (Søgaard & Nielsen, 2011).

Firms use divestitures as a process which reduces their operating activities into a narrower set of business holdings. The most common forms of divestitures that firms can use to reduce their operating activities are sell-offs, spin-offs and equity carve-outs (Fogh, 2009). However, spin-offs and sell-offs are the most popular forms of divestitures in South Africa (Nichols, Rosenberg, Majoni & Mukanjari, 2014). Therefore, the effects of voluntary sell-offs and spin-offs on shareholder wealth were investigated for the purposes of this study. Sell-offs often occur through a sale of peripheral (non-core, unrelated) assets. Warusawitharana (2008) states that sell-offs involve a transfer of ownership rights by the selling firm, in exchange for cash considerations or securities from the acquiring firm (Dahlum & Tai, 2015). In contrast, spin-offs often result in the establishment of a separate and independent firm. Spin-offs would involve an exchange in ownership rights with no cash flow implications to the

acquiring firm. This exchange would occur through a distribution of shares (on a pro-rata basis) by the selling firm (Afshar, Taffler & Sudarsanam, 1992).

1.2 Background and Motivation

Prior to the 1980s firms grew in size and complexity as a result of previous M&A activity related to empire-building practices (Ferreira, 1997). Practices of building empires employed during the 1960s and 1970s resulted in large firms that had divisions which did not necessarily have a strategic fit with the overall firm (Kaplan & Weisbach, 1992). Porter (1987) argues that M&A transactions during this period led to firms with complex corporate structures. These complicated corporate structures resulted in an erosion of shareholder wealth, rather than an enhancement in firm value. Following this period, market participants looked for simpler organisational structures which would lead to an enhancement in corporate focus (Kaplan & Weisbach, 1992). Market participants believed that an increase in corporate focus would lead to an improvement in the firm's value. As a result, the 1980s experienced a rise in divestiture activity (Berger & Ofek, 1999). This increase in divestiture activity was motivated by managers and shareholders who looked to refocus their efforts on core revenue-generating segments of the firm. Managers and shareholders enhanced corporate focus in order to enhance firm value and divestitures gained significance as a process for value creation. Scholars observed this trend in capital markets and began to research the benefits that divestitures possess in creating value for shareholders.

Research related to divestitures initially focused on the effects of voluntary divestitures on shareholder wealth enhancement and studies reported that divestitures have a positive impact on firm value (Alexander et al., 1984; Hearth & Zaima, 1984; Jain, 1985; Hite, Owers & Rogers, 1987). In subsequent years, scholars confirmed the findings of initial studies, reporting that divestitures have a positive impact on firm value (Mulherin & Boone, 2000; Veld & Veld-Merkoulova, 2008; Hillier, McColgan & Werema, 2009; Sudarsanam & Qian, 2007; Nguyen, 2013). Additionally, Kengelbach, Roos and Keienburg (2014) reported that divestitures continue to remain an important process in creating value for shareholders. Deloitte (2015) supported arguments by Kengelbach et al. (2014). This study reported that 39% of worldwide M&A activity during 2015 involved divestitures in some form (12 701 of 32 558 total deals). According to this report, divestiture activity in 2015 was slightly lower than in 2014; however, the study found that the volume of divestitures in 2015 was higher than divestitures completed in 2013 and 2012 (Deloitte, 2015).

Prior research related to divestitures has explored several areas. These include; the determinants of divestiture decisions, the impact of divestitures on short and long-term firm value and the determinants of divestiture returns. Research studying the determinants of divestiture decisions has identified several factors which influence the divestiture decision. These can be categorised as follows; increased focus (Montgomery, Thomas & Kamath, 1984; Afshar et al., 1992; Ferreira, 1997; Berger & Ofek, 1999; Bhana, 2006; Hillier et al., 2009), financial performance measures (John & Ofek, 1995; Daley, Mehrotra & Sivakumar., 1997; Berger & Ofek, 1999; Bhana, 2006; Hillier et al., 2009), company-specific factors (John & Ofek, 1995; Daley et al., 1997; Berger & Ofek, 1999; Bhana, 2006), corporate governance (Owen, Shi & Yawson, 2010) and the influence of leverage on divestiture decisions (Bhana 2006; Nguyen, 2013).

Research studying the impact of divestitures on shareholder wealth initially focused on the impact of divestitures on short-term firm value (Alexander et al., 1984; Jain 1985). In subsequent years, research was conducted to better understand the impact of divestitures on shareholder wealth. However, studies have reported mixed results. Alexander et al. (1984;) Jain (1985;) Afshar et al. (1992;) Lee and Lin (2008;) Hillier et al. (2009;) Sun (2012) and Nguyen (2013) found that sell-offs have a positive impact on firm value. Research studying the impact of spin-offs on short-term firm value have also found that divestitures have a positive impact on short-term firm value (Mulherin & Boone, 2000; Maxwell & Rao 2003; Kirchmaier 2003; Veld & Veld-Merkoulova, 2004, 2008; Sin & Ariff, 2006; Sudarsanam & Qian, 2007; Lehtonen, 2008; Zakaria & Arnold, 2010). However, Murray (2000) conducted a study on the effects of spin-offs on short-term firm value in the UK, finding that spin-offs have a negative impact on shareholder wealth. Studies investigating the impact of divestitures on short-term firm value in South Africa have also reported mixed results. Blount and Davidson (1996;) Bhana (2006;) and Lugisani (2010) reported that divestitures have a positive impact on short-term firm value in South Africa. However, Joosub et al. (2017) reported that divestitures have a negative impact on short-term shareholder wealth in South Africa.

Studies which have extended the event window to understand the impact of divestitures on long-term firm value have also reported mixed results. Cusatis et al. (1993;) Desai and Jain (1999;) McConnell et al. (2001;) and Veld and Veld- Merkoulova (2004) reported that divestitures have a positive impact on long-term firm value. However, Sudarsanam and Qian

(2007;) Zakaria and Arnold (2010;) and Lee and Lin (2008) found that divestitures have a negative impact on shareholder wealth in the long term. Studies focusing on the effects of divestitures on South African shareholders over the long term also reported negative returns (Bhana, 2004; Nichols et al., 2014).

Research has also studied the determinants of divestiture returns (Hillier et al., 2009; Nguyen, 2013; Dahlum & Tai, 2015). Hillier et al. (2009) found that firms with lower levels of efficiency (measured by ROA in the year prior to the divestiture announcement) reported superior ARs than firms with higher levels of efficiency. Nguyen (2013) reported that highly-levered firms report superior ARs than lower-levered firms. Dahlum and Tai (2015) found that smaller firms report superior ARs than larger firms. However, research investigating the determinants of divestiture returns has primarily focussed on developed markets with minimal research having been conducted in South Africa

1.3 Problem Statement

Research investigating the impact of divestitures on firm value reveals the following; First, one group found that divestitures have a positive effect on short-term firm value (Miles & Rosenfeld; 1983; Rosenfeld, 1984; Mulherin & Boone, 2000; Bhana, 2006; Rozing, 2008; Hillier et al., 2009; Zakaria & Arnold, 2010; Nguyen, 2013). Another group found that divestitures negatively impact short-term firm value (Murray, 2000; Joosub et al., 2017). Possible reasons for these opposing views include different techniques used to measure returns. Studies have used Mean-adjusted returns (Miles & Rosenfeld, 1983; Rosenfeld, 1984), CARs (Murray, 2000; Sin & Ariff, 2006; Lee & Linn, 2008; Rozing, 2008; Zakaria & Arnold, 2010; Nguyen, 2013; Nichols et al., 2014; Dahlum & Tai, 2015) and industry-adjusted cash flow returns (Cho & Cohen, 1997).

Second, a majority of these studies were conducted in developed markets such as the US, the UK, and Western Europe (for example Denmark, Sweden, and France). However, minimal research has been conducted in developing markets. Research conducted in developing markets includes studies conducted in Malaysia (Sin & Ariff, 2006; Zakaria & Arnold 2010) and Taiwan (Sun, 2012). Furthermore, research studying the impact of divestitures on firm value in South Africa also remains minimal and studies focussing on the impact of divestitures on firm value in South Africa have reported mixed results. Blount and Davidson (1996) and Bhana (2006) both found that divestitures have a positive impact on shareholder

wealth in South Africa. However, with the most recent period of these studies ending in 2001, these studies prove to be outdated. Lugisani (2010) and Joosub et al. (2017) conducted more recent studies; however, these studies reported opposing results. Lugisani (2010) reported that divestitures have a positive impact short-term firm value; however, this study only observed a period of 5 years. Joosub et al. (2017) reported that divestitures have a negative impact on short-term firm value; however, this study only had a small sample size of 27 divestitures. Therefore, this study adds to the body of knowledge related to research on divestitures by using a longer and more recent observation period to investigate the impact of divestitures on short-term firm value. Additionally, Nichols et al. (2014) also conducted a more recent study; however, this study investigated the impact of divestitures on long-term firm value and found that divestitures have a negative impact on firm value.

Third, a majority of research related to divestitures only focussed on the impact of divestitures on firm value and did not go further to study the determinants of divestiture returns. The few studies which investigated the determinants of divestiture returns include; Afshar et al. (1992;) Berger and Ofek (1999;) Haynes, Thompson and Wright (2002;) Lehtonen (2008;) Hillier et al. (2009;) Fogh (2009;) and Nguyen (2013). However, these studies were conducted in developed markets and given South Africa's unique corporate environment, results obtained in this study may differ from those conducted in developed markets. Bhana (2006) studied the determinants of divestiture returns in South Africa. However, with an observation period ending in 2001, this study proves to be outdated. Additionally, this study also uses a different process to understand the determinants of divestiture returns in South Africa than methods employed by Bhana (2006). Therefore, this study will add to previous research conducted by Bhana (2006) by using a more recent observation period and providing an alternative process for investigating the determinants of divestiture returns.

South Africa possesses a unique legislative environment that governs how firms operate in the country. Corporate governance regulations required by the BBBEE Act and King reports are unique to the South African operating environment. Bhana (2006) conducted a study focussing on South Africa to illustrate the unique benefits of divestitures for shareholders of South African companies. However, with an observation period ending in 2001, this study proves to be outdated in light of BBBEE requirements which were amended after 2001. Additionally, changes in regulations governing financial markets following the 2007/8

financial crisis would not have been included in Bhana (2006). For example adjustments to economic and regulatory capital requirements instituted by legislative agencies may have had an impact on how firms operate. Therefore, a study of this nature may prove to be beneficial in understanding divestitures in South Africa. Additionally, this study differs from Bhana (2006) in the following ways; it determines whether firm size, leverage, and efficiency levels prior to the divestiture have an effect on returns related to divestitures. This is explored through an analysis of cross-sectional regressions using these variables. To add to an understanding of the determinants of divestiture returns a comparison of ARs was also conducted using subsamples of firms within the original sample portfolio.

1.4 Research Aim and Questions

The study aims to provide a greater understanding of divestitures in South Africa by building on prior knowledge. This is completed by providing an updated evaluation of the effects of divestitures on shareholder wealth in South Africa. To contribute to prior literature, this study looks to answer the following research questions by analysing companies listed on the JSE between 2000 and 2014:

i. What are the determinants of divestitures in South Africa?
ii. What is the short-term impact of divestitures on firm value in South Africa?
iii. What are the determinants of short-term divestiture returns in South Africa?

1.5 Contribution of the Study

This study contributes to existing research in the following ways. First, the study adds to previous research related to the determinants of divestitures in South Africa conducted by Bhana (2006). Bhana (2006) studied divestitures up to 2000; however, this study provides a more recent observation period ending in 2014. Additionally, Bhana (2006) only included four determinants of divestitures; namely focus (measured by reductions in segments of the firm using dummy variables), underperformance (measured by reductions in operating margin of the firm by using dummy variables to measure this determinant), size (measured by the value of the divestiture relative to the market value of the firm in question) and a financial variable (measured by reductions in debt capital by using dummy variables to measure this determinant). Bhana (2006) studied these variables to understand their effects on divestiture returns by setting CARs as the dependent variable. However, this study sets “sale” which

represents whether a firm chose to divest or not as the dependent variable. This method is used to understand whether these variables had an impact on the divestiture decision and is in line with methods employed by Hillier et al. (2009).

The independent variables for this exercise include a more comprehensive list related to the determinants of divestitures. Variables of sales growth and CEO Turnover (to measure corporate focus), ROA and ROE (to measure efficiency), D-t-A, D-t-E (to study long-term leverage effects) and both interest coverage and current ratios (to study short-term leverage effects) provide a larger variable set. Additionally, these include variables which are not included in Bhana (2006). This study also differs from Bhana (2006) by including an analysis of both univariate tests and logit regressions, as opposed to only analysing results from regressions. Univariate tests found CEO turnover, ROA, D-t-A, and D-t-E to be significant determinants of divestiture decisions. However, logit regressions only found CEO Turnover and ROA to be significant determinants on divestitures.

Second, prior research has reported mixed results regarding the impact of divestitures on firm value in South Africa. Blount and Davidson (1996) and Bhana (2006) reported positive ARs associated with divestitures in South Africa; however, these studies are outdated. Lugisani (2010) also found divestitures to positively impact firm value; however, this study only observed a period of 5 years. Joosub et al. (2017) reported negative short-term abnormal returns; however, this study used a sample of 27 firms and smaller sample sizes possess less statistical power. Therefore, this study will add to the debate regarding the impact of divestitures on short-term shareholder wealth in South Africa, by providing a more up to date analysis of the impact of divestitures on short-term firm value. The study found that divestitures report CARs of 0.1317% (significant at the 0.01 level) for the 5-day (-2;+2) event window. Alternative event windows of 3 days (-1;+1) and 6 days (-5;0) also reported positive returns. These event windows reported ARs of 0.9628% (significant at the 0.10 level) and 2.2180% (significant at the 0.10 level), respectively. Results of these event windows are consistent with findings of prior research conducted in South Africa (Blount & Davidson, 1996; Bhana, 2006; Lugisani, 2010) and in other markets (Alexander et al., 1984; Afshar et al., 1992; Lehtonen, 2008; Fogh, 2009; Hillier et al., 2009; Zakaria & Arnold, 2010; Sun, 2012; Dahlum & Tai, 2015) that report that divestitures have a positive impact on firm value. To provide a greater understanding regarding the effects of divestitures on firm value, this study also included a 21-day (-10;+10) event window. An extension of the event window to

21 days reported negative returns of 3.0148% (significant at the 0.05 level). These findings support Nichols et al. (2014) who found that divestitures in South Africa can result in an erosion of shareholder wealth over a longer period.

Finally, this study updates research conducted by Bhana (2006) related to the determinants of divestiture returns for shareholders of South African firms. Bhana (2006) reported that corporate focus and previous underperformance by the firm prove to be statistically significant determinants of divestiture returns. However, the size of the divested unit relative to the firm's market value, and the firm's debt capital proved not to be significant determinants of divestiture returns. This study conducted logit regressions using CARs as the dependent variable and found that leverage is a statistically significant determinant of divestitures returns (significant at the 0.01 level); however, firm efficiency and size proved not to be statistically significant determinants of divestiture returns in South Africa. The study also included a different technique for investigating the effects of firm size, efficiency, and leverage on divestiture returns by comparing subsamples from the portfolio of divesting firms. Results from the subsamples found that firms with lower levels of efficiency report superior ARs than firms with higher levels of efficiency (2.7919% vs. -4.8562%, significant at the 0.01 level). Larger firms reported superior ARs than smaller firms (2.3200% vs. -14.4571%, significant at the 0.10 level) and highly-levered firms reported superior ARs than lower-levered firms (2.7796% vs. 1.6421% significant at the 0.01 level).

1.6 Structure of the Study

The rest of this study is organised as follows.

i. **Chapter 2** reviews prior literature related to divestitures, discusses the findings of prior studies and states hypotheses used to answer the 3 research questions of this study.
ii. **Chapter 3** provides definitions of the variables used in this study, details the techniques used to measure the determinants of divestitures, the impact of divestitures on firm value and the determinants of divestiture returns and discusses the research methods used in the study.
iii. **Chapter 4** presents and discusses findings based on the dataset.
iv. **Chapter 5** concludes the study, discusses limitations to this study and provides suggestions for further research.

2. LITERATURE REVIEW

2.1 Introduction

This chapter reviews prior literature related to corporate divestitures. Section 2.2 reviews literature related to the determinants of divestiture transactions. Section 2.3 presents empirical results from prior studies discussing the impact of divestitures on firm value. Section 2.4 reviews literature related to the determinants of divestiture returns. Section 2.5 details the process adopted in this study by summarising concepts discussed in chapter two and states hypotheses used to answer this study's research questions.

2.2 Determinants of Divestitures

This section discusses theories that affect divestiture decisions. Previous research is reviewed and the results of those studies are presented to provide an understanding on which determinants may affect divestiture transactions in South Africa.

2.2.1 Corporate Focus Theories

Improvements to management's ability in focussing on the firm's core segments have been identified as one of the most important motivating factors behind corporate divestitures (John & Ofek, 1995). Large firms with complicated corporate structures often result in managers having less attention devoted to the firm's core business activities (John & Ofek, 1995). After certain levels of firm diversification related to previous M&A activity, a reduction in the firm's performance can occur due to stresses related to monitoring efforts required from the firm's managers (Hoskisson & Turk, 1990). An inability to keep abreast of all the firm's operations as a result of opaque corporate structures can lead to manager's attention becoming stretched to its limits. A lack of focus can then lead to losses for the firm. However, the corporate focus hypothesis argues that firms which increase corporate focus can benefit from managers having more time which can be allocated to the firm's core segments in a more efficient manner (John & Ofek, 1995). Dittmar and Shivdasani (2003) and Berger and Ofek (1999) further support John and Ofek (1995), arguing that enhanced corporate focus may be a key objective in corporate restructuring programmes. Furthermore, Lehtonen (2008) also supports this view by arguing that a key benefit of refocusing programmes relates to managers having more oversight on the firm's revenue-generating business units.

Ravenscraft and Scherer (1987) and Linn and Rozeff (1984) argue that divestitures may be related to previous acquisition activity. During the 1960s and 1970s firms grew in size and complexity as a result of previous M&A activity. M&A activity was motivated by empire-building practices which led to firms with complex corporate structures (Ferreira, 1997). Some of these transactions resulted in firms acquiring segments which did not fit with the firm's overall strategic goals (Kaplan & Weisbach, 1992). Following the 1960s and 1970s divestitures grew in popularity as firms looked to benefit from enhanced monitoring associated with running leaner operational structures. Divestiture activity grew as firms looked to benefit from a reduction of the firm's overall scope in order to enhance the manager's attention on core segments of the firm. As a result unbundling of large conglomerates became standard practice during the 1980s (John & Ofek, 1995). Ferreira (1997) argues that in order to improve firm value, South African firms followed global trends of simplifying their organisational structures with the aim of enhancing corporate focus (Bhana, 2006). Larger firms may suffer from incorrect valuations due to a lack of transparency associated with complicated corporate structures. However, enhancing focus through the pursuit of leaner structures was in stark contrast to previous practices of over-diversification and empire building employed during the 1960s and 1970s (Ferreira, 1997).

Divestitures implemented with the objective of increasing focus and improving the firm's performance may result in a convergence of shareholder, manager and external analyst incentives. Shareholders and managers can benefit from enhancements to the firm's value as a result of improvements in the monitoring of the firm's operations. Therefore, time gained can lead to improved share prices as a result of a reduction in monitoring costs. Benefits associated with leaner firms also include enhancements in operational synergies (Mulherin & Boone, 2000). Afshar et al. (1992) state that in environments where negative synergies may exist, disposing of loss-making units which do not possess a strategic fit with the overall firm can contribute to the diminution of the selling firm's shareholders (Nichols et al., 2014). Byerly, Lamont and Keasler (2003) also argue that divestitures implemented with the intention of increasing corporate focus can influence market reactions in a positive manner. Divesting a subsidiary may be beneficial in the valuation of the overall firm as it creates more transparency for shareholders, managers and external analysts (Lehtonen, 2008).

Additionally, incentive schemes for the firm's managers are often linked to the profits that a firm generates. Enhancements in the firm's performance can result in higher share prices and

managers benefits from enhancements in their personal (Amihud & Lev, 1981; Shleifer & Vishny, 1989). Therefore, positive market reactions associated with divestitures can also be beneficial for the firm's managers. Divestitures simplify firm structures; therefore, an added benefit of leaner corporate structures also includes reduced managerial entrenchment. Managers of leaner firms can benefit from a reduction in employment risk as a result of improvements to the firm's profits associated with running leaner firms. This can result in an alignment of interests between managers, shareholders and external analysts. This phenomenon is described by the incentive alignment hypothesis. An example of an alignment of incentives relates to managers who become shareholders of a new firm that is established as a result of a spin-off. A spin-off where managers have an equity interest in the newly-established legal entity can benefit from compensation in the form of ownership interests. The compensation received in the form of equity holdings would result in managers having a vested interest in the performance of the newly-established entity.

Research has provided evidence showing the benefits of refocusing programmes on shareholder wealth enhancement (John & Ofek, 1995; Comment & Jarrell, 1995; Berger & Ofek, 1999; Desai & Jain, 1999; Bhana, 2006). John and Ofek (1995) found that 34% of firms in their sample which reduced business segments from one year to the next with the use of a divestiture, increased firm value. Desai and Jain (1999) found 3-day abnormal returns to be significantly larger for focus increasing spin-offs (4.45%) versus non-focus increasing spin-offs. Studies also provide evidence that firms which engage in divestitures to increase corporate focus generally achieve enhanced operating performance (Comment & Jarrell, 1995; John & Ofek, 1995). An enhancement in operating performance resulted in improved stock returns for these entities. Bhana (2006) also found that corporate focus is a statistically significant determinant of divestitures in South Africa (significant at the 0.05 level). This study found that firms enhanced performance levels as a result of their ability to focus on fewer business segments. Finally, Hillier et al. (2009) also conducted a study investigating the effects of divestitures on firms in the UK. This study found that firms which stated refocusing as a determinant of divestiture transactions reported CARs of 0.646 and 0.920 using a 2-day (-1;0) and 3-day (-1;+1) event window, respectively. Results of both event windows proved to be statistically significant at the 0.01 level.

Studies have used different variables to measure corporate focus. However, the proxies for corporate focus used in this study are in line with Berger and Ofek (1999). To measure

corporate focus this study used sales growth and CEO Turnover. Sales growth measures the firm's ability to increase revenue over a certain period of time. Sales figures can be a source for influencing the formulation and execution of corporate strategies which managers and shareholders of the firm would use to enhance firm value (Gerald & Elisifa, 2013). Additionally, sales figures over time are the most widely utilised measure of growth for a firm and are a key metric in the overall decision-making process (Gerald & Elisifa, 2013). Shareholders and the other market participants may use poor revenue figures as a form of corporate discipline by requesting that the firm should refocus its strategy to improve sales growth. Therefore, when sales decline, managers of the firm can be pressured to re-establish company growth. Berger and Ofek (1999) found that sales growth has a statistically significant effect on the divestiture decision. Findings suggest that firms would focus their attention on revenue-generating segments of the business firm (Berger & Ofek, 1999).

During extended periods of underperformance by the firm, dissatisfied shareholders can institute pressure on the firm's management team to implement a refocusing strategy. If underperformance persists, shareholders can replace the firm's CEO as a form of corporate control (Berger & Ofek, 1999). Stakeholders would base their decision on the likelihood of the incumbent CEO not divesting previously acquired non-performing units. Incumbent CEOs would oppose the divestiture decision as a form of admitting that they made mistakes in the past. These views are supported by Weisbach (1995). Berger and Ofek (1999) found that approximately 31% of firms in their sample instituted changes to the CEO as a form of corporate refocusing. However, the replacement of the CEO by sample firms was not significantly higher than firms which did not institute refocusing programmes. These findings support Berger and Ofek (1999) who show that CEO Turnover possesses a statistically significant impact on divestitures. Authors argue that to avoid past mistakes, non-performing managers would not divest (Berger & Ofek, 1999). These arguments are in line with Scherer (1988) and Ravenscraft and Scherer (1991), and support Boot (1992)'s views.

2.2.2 Efficiency Theories

Divestitures can be used as a process which improves corporate efficiency. An enhancement in corporate efficiency can result in an enhancement of the firm's overall value (Berger & Ofek, 1999). Simpler corporate structures can lead to enhancements in synergies related to how the firm operates. In turn, these can result in a reduction of the firm's running costs (Ferreira, 1997). Efficiency theories argue that a firm may be worth more when separately

owned or managed as opposed to the firm being incorporated in large business structures that are difficult to understand (Schipper & Smith, 1983; Miles & Rosenfeld, 1983). Efficiency theories argue that when a large firm is separated into smaller businesses, shareholders benefit from reduced monitoring associated with running a smaller entity. Additionally, Mulherin and Boone (2000) argue that improvements in synergies can result in positive announcement returns. These views are supported by Daley et al. (1997) who illustrate the benefits that divestitures have in enhancing corporate efficiency. Therefore, firms may use divestitures to enhance operational efficiency, reduce running costs and improve their revenue-generating streams (Dittmar & Shivdasani, 2003; Berger & Ofek, 1999).

Rather than simply evaluating each unit, capital markets also consider the performance of all the different business units within the firm when valuing the overall firm. Synergy explanations related to divestitures argue that in cases where synergies are too perfect, firms may be too small in size (Buckley, 1991). Positive synergies suggest that prior acquisitions increase overall firm value by the amount which exceeds the cost of the previously acquired asset (Buckley, 1991). However, benefits associated with expanding a small firm into a larger organisation may be a disadvantage for the firm's managers (Williamson, 1985). In contrast, negative synergies suggest that a firm may be too large in size. Additional monitoring efforts required by firms with complicated corporate structures can lead to diseconomies of scale. Therefore, negative synergies may suggest that a "lack of fit" exists between the divested unit and other divisions within the firm which can have a negative effect on firm value. The negative impact on firm value would result in managers having to stretch their efforts in monitoring large firms to their maximum (Buckley, 1991). Additionally, if negative synergies are related to previous M&A activity, divestitures can provide evidence that the firm was previously run in an inefficient manner by managers (Buckley, 1991). Therefore, negative synergies within the firm can suggest that a separately owned unit may be worth more to shareholders than if the unit was incorporated into a large parent (Buckley, 1991). Kaplan and Weisbach (1992) support this view by arguing that divestitures can enhance shareholder wealth if the aim is to improve synergies. These views are also supported by Bradley, Desai and Kim (1983). However, efficiency theory arguments are incomplete without understanding why the firm's management may prefer large firms with complex corporate structures (Buckley, 1991).

Baker, Jensen & Murphy, (1988) provide an explanation of management's preference for excessive firm size. First, the unique experience required in running operations of larger firms provides management with an advantage of understanding the inner workings of complex firms (Buckley, 1991). The knowledge that current management teams have in running complex businesses contrast with risks associated with employing and training new managers, primarily from an added cost perspective. Therefore, hiring new management teams could prove to be costly for the firm's shareholders and current management teams would enjoy greater job security. Second, remuneration packages are often tied to the size of the firm. Therefore, larger corporate structures could incentivise the building of empires by the firm's managers. If remuneration packages are tied to earnings and the value of a large-parent firm, managers would oppose reducing the firm's size (Schipper & Smith, 1986). Opposition to a divestiture would be motivated by an expectation that incentives would be reduced as a product of running smaller firms and excessive firm size can result in manager self-entrenchment (Baker et al., 1988).

However, Coase (1988) argues that simpler corporate structures benefit both shareholders and other claimholders including the firm's managers. Shareholders would enjoy greater oversight of the firm's operations as a result of corporate structures that are easier to understand. In order to enjoy the benefits of enhanced oversight, shareholders would impose restructuring programmes which may include a divestiture in order to benefit from reduced monitoring associated with simpler corporate structures (Buckley, 1991). Additionally, management teams can also benefit from correcting synergies of the firm through the use of a divestiture. The correction of negative synergies would result in the firm running more efficiently would lead to an improvement in firm value. Managers would benefit from greater job security and an improvement in their remuneration packages as a result of a divestiture. However, proceeds received from divestitures should be reinvested to enhance the firm's operating efficiency and these arguments provide additional motivation for increasing transparency through the use of divestitures.

Studies argue that a motivating factor behind divestiture decisions relates to a "lack of fit" between the divested asset and the rest of the firm's operations (Hite & Owers, 1983; Schipper & Smith, 1983; Alexander, et. al., 1984; Morck, Shleifer & Vishny, 1990). Hite and Owers (1983) reported 5-day gains of 9.3% for firms which announced that a spin-off from the parent firm would be incorporated into another firm, versus gains of 4.7% in their overall

sample. Hite and Owers (1983) also reported excess returns of 14.5% between day -50 and the completion of a spin-off. In a sample of 30 spin-offs, correcting negative synergies was related to 65 acquisitions in the 2 years preceding a divestiture (Schipper & Smith, 1986). 17 of the 30 spin-offs in this study were explicitly reversals of previous acquisitions. Schipper and Smith (1986) found that 37 of the 58 spin-offs in their study reported that negative synergies were a determinant of the divestiture decision. Linn and Rozeff (1985) found that the largest abnormal returns in spin-offs were motivated by a need to correct negative synergies present in parent firms. Additionally, when parent firms issue stock in a new subsidiary through a spin-off, 5-day positive returns around the announcement date reported gains of 1.8% (Buckley, 1991). Kaplan and Weisbach (1992) also provide evidence related to negative synergy explanations that are associated with gains from divestitures and their findings are consistent with observations from Bradley et al. (1983).

Prior literature has used ROA, ROE or ROS to measure firm efficiency. An over-investment in non-performing business units by the firm can negatively affect firm value. Increasing ROA levels can provide evidence of an improvement in the firm's ability to generate returns from the assets that it owns. Therefore, an increase in ROAs as a result of a divestiture can provide evidence that the firm has corrected the inefficient use of capital (Maksimovic & Phillips, 2001; Warusawitharana, 2008). Increasing ROE figures can illustrate that the firm has improved its ability to generate returns from capital invested by equity holders. Therefore, shareholders would be interested in this financial metric as an indicator of the overall firm's performance. Increasing ROS figures illustrate an enhancement in the firm's ability to generate returns from its turnover. However, for the purposes of the study, ROA and ROE were utilised to measure firm efficiency. Hillier et al. (2009) found that share price reactions in the UK are positively correlated to improvements in operating returns after the divestiture announcement. Their study reported that investors react positively to divestiture announcements as a result of the benefits associated with improvements in firm efficiency. Additionally, their sample portfolio of divesting firms found that improvements in corporate efficiency resulted in enhancements to ROA (-0.001 to 0.038) in the 3 years before and 3 years after the divestiture announcement (Hillier et al., 2009). Furthermore, firms which stated that poor performance led to the divestiture reported CARs of 0.641 and 0.929 for 2-day (-1;0) and 3-day (-1;+1) event windows, respectively. Results for both event windows were statistically significant at the 0.01 level.

2.2.3 Financing Theories

Divestitures can provide an alternative avenue that firms can utilise in raising capital. Divestitures allow the firm to raise capital internally rather than raising capital externally in debt or equity markets. However, by including non-performing segments on the firm's balance sheet over a sustained period of time can contribute to managers experiencing difficulty in replicating financial market returns which creditors may require in order to extend financing to a firm. Therefore, internal financing through the use of divestitures can be a source for liberating potential cash flows from within the firm (Nichols et al., 2014). Cash flows generated from divested assets can provide incremental value creation for the firm's shareholders as opposed to the actual change in the divested asset's value (Owen, et. al., 2010). Proceeds unlocked through internal capital expropriation can allow firms to redirect divestiture proceeds towards business units or external investment projects that possess marginally higher returns than the divested asset's returns (Owen et al., 2010). However, a key requirement of raising capital internally by using divestitures states that divestiture proceeds should be reinvested in an efficient manner.

The efficient deployment of asset sales hypothesis argues that managers of the firm only retain assets that they believe possess a comparative advantage (Lang, Poulsen & Stulz, 1995). Lang et al. (2014) argue that a transfer of ownership rights should occur with a counterparty that can manage these assets more efficiently irrespective of their financial situation (Nichols et al., 2014). Continuing to have underperforming assets on the firm's balance sheet can result in the firm's capital structure not being at its optimum level (Buckley, 1991). Furthermore, underperforming assets can create a "drag" on the firm's profits which may disrupt its ability to raise capital externally as a result of the negative impact they may have on the firm's cost of capital (Buckley, 1991). Therefore, firms should sell assets which negatively firm value and the firm's ability to raise capital externally. Alternatively, firms can sell assets which no longer fulfil their strategic objectives as soon as the opportunity presents itself. Capital raised from these assets would then be reinvested within the firm or in projects that enhance overall firm value. If firms ignore the possibility of redeploying proceeds received from selling these underperforming business units, firms may lose out on the opportunity to invest in projects that can enhance firm value (Hite & Owers, 1983). Firms may also lose out on benefits associated with reducing their overall debt if underperforming assets remain on the balance sheet (Buckley, 1991).

Nguyen (2013) also argues that divestiture proceeds should be reallocated to projects which increase the firm's revenues which can lead to an enhancement in the overall value of a firm. These views are supported by arguments from Chen and Guo (2005) who argue that proceeds from divestitures should be used to reduce any financial constraints that the firm may have. Selling firms should select assets which posses the largest opportunity cost relative to the value of cash flows they may generate from a divestiture (Maksimovic & Phillips, 2001). Shareholders of the selling firm would benefit equally from the redeployment of proceeds received whether they are reinvested in the firm or are paid out to investors. However, divestiture transactions implemented in restructuring programmes which look to split up the firm may result in an increase in the firm's overall risk. Creditors would oppose the divestiture decision if this risk is shifted between claimholders with no benefit to creditors. Therefore, if de-conglomerisation is implemented solely to increase firm value; creditors may be negatively impacted if shareholder gains exceed creditor losses (Buckley, 1991). Therefore, proceeds from divestitures should be utilised in a manner in line with both the financing hypothesis and the efficient deployment of asset sales hypothesis.

Lang et al. (1995)'s findings support the financing hypothesis. Their study found that firms which used divestiture proceeds to pay shareholders reported ARs of 3.92%. In contrast, firms which used proceeds to repay debt obligations reported ARs of -0.48%. However, their findings proved to be in opposition to the efficient deployment hypothesis. Hillier et al. (2009) also conducted a study to determine whether divestiture proceeds were reinvested to enhancement firm value. Their study found that AARs on the announcement day reported positive returns of 0.895 (significant at the 0.01 level). Authors also reported CARs of 0.327 and 0.584 using a 2-day (-1;0) and 3-day (-1;+1) event windows, respectively. However, these findings also proved not to be significant. Additionally, firms which stated financing working capital as a determinant of the divestiture decision reported CARs of -0.500 and -0.398 for 2-day (-1;0) and 3-day (-1;+1) event windows, respectively (Hillier et al., 2009). However, these findings proved not to be statistically significant. Hiller et al. (2009) also studied whether reductions in debt proved to be a statistically significant determinant of divestitures. Firms which stated debt reduction as a determinant of divestiture decisions reported ARs of 0.733 and 1.060 using a 2-day (-1;0) and 3-day (-1;+1) event window, respectively. Both sets of results proved to be statistically significant at the 0.01 level. Results reported in Hillier et al. (2009) provide evidence that divestitures can be motivated by decisions that satisfy arguments related to financing theories. Therefore, divestitures still

possess wealth enhancing benefits for shareholders of the firm if their proceeds are utilised in the correct manner.

2.2.4 Expropriation Theories

The financing hypothesis provides an understanding of the ability that divestitures have as a process which firms can use to raise capital. However, managers often have to meet certain performance objectives and during periods of sustained underperformance firms may have very stringent requirements attached to their resources. If firms continue to underperform as a result of including non-performing segments on the balance sheet, managers will experience additional scrutiny by the firm's shareholders (Buckley, 1991). Furthermore, if underperformance persists, managers may experience difficulty in raising capital externally and will be unable to invest in value-generating projects. This is a result of markets being more cautious when extending financing to an underperforming firm. However, firms may need to divest from profitable businesses in order to enhance firm value in situations where alternative financing avenues present themselves (Mayers and Smith, 1986). Therefore, should external financing prove to be too costly for firms, companies can use divestitures as a source for raising capital (Buckley, 1991).

According to expropriation theories, divestitures can be an inexpensive form of raising capital. Inexpensive financing theories argue that the primary aim of firms engaging in sell-offs is that firms should raise capital from sale of a business unit or asset if they cannot raise capital externally (Buckley, 1991). During environments where external financing is deemed to be too costly, firms use internal financing processes which are available to them. If firms do not use these processes they may forfeit the opportunity to invest in positive NPV projects (Buckley, 1991). However, Modigliani-Miller (M&M) financing irrelevance propositions argue that this would not be optimal when assuming costless access to capital markets (Miller & Modigliani, 1961). Therefore, sell-offs would not be an option if M&M theory assumptions hold, and companies would not take on all positive NPV projects. Buckley (1991) argues that divestitures may prove to be beneficial to a firm during periods where debt markets prove to be too costly, particularly in the future (Buckley, 1991). Therefore, divestitures may provide a better option for managers of the firm to raise capital internally rather than externally and divestiture proceeds can then be reinvested to finance higher return-generating projects (Dahlum & Tai, 2015).

However, Mayers and Smith (1986) provide an important consideration related to potential risks of expropriating capital through the use of divestitures. Mayers and Smith (1986) argue that managers can be motivated by windfalls which affect their remuneration schemes as opposed to the need to enhance overall firm value. Windfalls would exhibit themselves in the form of share compensation structures or cash incentives attached to a large increase in the firm's profits as a result of recognising divestiture proceeds on the firm's financial statements (Buckley, 1991). Therefore, managers would look to benefit from compensation windfalls by arguing that the divestiture would enhance firm, when in fact managers were motivated by a desire to benefit from a need to enhance short-term profits which may tied to their remuneration packages.

Contrastingly, Hansmann (1996) provides a more balanced view. Hansmann (1996) argues that the form of organisational realignment is motivated by minimisation of transaction costs. Hansmann (1996) argues that the mutual form will prevail when contracting costs are larger than risk-bearing costs. For example; if divestitures transfer wealth from debt to equity holders, shareholders would be required to compensate for the right to extract wealth from a higher cost of credit. However, this redistribution of expropriated wealth would be neutral from an ex-ante perspective (Galai & Masulis, 1976; Jensen & Meckling; 1976; Myers, 1977; Buckley, 1991). Therefore, shareholders may only benefit from purposeful expropriation tactics during periods when the transfer of wealth is larger than the present value of losses (Buckley, 1991). Another viewpoint related to capital expropriation relates to creditor expropriation theories.

Creditor expropriation theories centre on the protection of creditors and their claims against any proceeds. These theories suggest that divestiture gains can be attributed to an unanticipated transfer of value from the firm's creditors to its shareholders (Buckley, 1991). Expropriation of wealth may be the result of an increase in the firm's risk levels through an enhanced distribution of wealth to shareholders of the firm (Buckley, 1991). Creditors may not desire for an expropriation of proceeds received from divestitures. Therefore, in search of a consensus bargain, creditors would look for barriers to excessive distributions. Creditors can protect their claims through negotiations which reinforce anti-divestiture barriers. They may do so by exercising veto powers related to any expropriation of capital from within the firm. Creditors would use measures which were previously agreed during negotiations when creditors extended loans to the firm (Galai & Masulis, 1976; Jensen & Meckling, 1976;

Myers, 1977). However, creditor expropriation theories may not fully take into account benefits associated with divestiture gains as they would reduce firm value if other claimholders were to bear these costs (Hite & Owers, 1983; Schipper & Smith, 1986; Buckley, 1991). Therefore, excessive distribution theories can offer an alternative to creditor expropriation theories.

Excessive distribution theories offer an account of any barriers associated with divestitures. These theories exhibit themselves in environments where restrictions are imposed on any gains received from selling an asset or business unit (Buckley, 1991). Excessive distribution theories primarily relate to a disproportionate payout of divestiture gains. Proceeds from divestitures would be paid out disproportionately if divestiture gains were to be paid to shareholders first rather than creditors (Buckley, 1991). This would result in creditor claims becoming worthless. Therefore, to protect themselves against this risk, creditors may negotiate veto powers as a form of bargaining power during the loan process in order to protect their interests should management execute divestitures in the future. Creditors would protect their interests by including certain conditions in any pre-arranged loan agreements by attaching covenants on any divestiture gains (Schipper & Smith, 1986). Should any assets be sold, these covenants in loan agreements would give creditors the ability to claim ownership rights on any assets disposed of irrespective of where these assets may be incorporated following a divestiture (Hite & Owers, 1983). For example; creditors may attach their claims against the divested unit's new legal entity or domicile should there be a spin-off (Buckley, 1991). Therefore, these requirements can be used to protect creditors against any potential payouts which are disproportionate (Buckley, 1991). However, spin-offs are generally not a capital raising technique and are viewed more as a form of unlocking value from the assets which are spun-off.

Finally, other stakeholders such as employees or governments may also have a desire to claim proceeds received from divestitures. Buckley (1991) argues that these claimholders may not be opposed to the expropriation of wealth from a redistribution viewpoint. However, these claimholders would be opposed to capital from an efficiency standpoint. These views are consistent with arguments highlighted in other studies (Galai & Masulis, 1976; Jensen & Meckling, 1976; Myers, 1977). However, claims on divestiture proceeds by these stakeholders are not a common occurrence. Studies have explored the ability that divestitures have as a process for expropriating capital from within the firm. However, inexpensive

financing theories may not provide the best explanations for this phenomenon, but an understanding of the relationship which exists between expropriation theories and financing theories provides a more comprehensive view of the ability that divestitures have in raising capital for firms.

Skantz and Marchesini (1987) found that divestitures intended to expropriate capital reported ARs of 21.4% in the month of the announcement. However, only 57.87% of firms in their sample reported the intended use of divestiture proceeds. Hite and Owers (1983) found that in 29 of the 53 pairs in their sample which had expropriation as the intended purpose of divestitures, share prices and senior security ARs reported the same signs. Additionally, Hillier et al. (2009) found that 6.05% of firms in their sample stated that divestiture proceeds were intended to finance working capital. Authors reported that ARs increase when selling firms use divestiture proceeds to service debt or use those proceeds to finance working capital. 34.38% of firms in their sample stated that divestiture proceeds would be used to reduce debt and 14.77% of firms stated that divestiture proceeds would be reinvested in the firm (Hillier et al., 2009). As expropriation theories tend to work in conjunction with financing theories, results from Hillier et al. (2009) detailing how capital expropriated from within the firm has affected firm have been discussed in *section 2.2.3*.

2.2.5 Information Theories

Managers and shareholders may believe that markets do not understand the firm's overall corporate structure. This lack of understanding can be associated with a lack of transparency in the firm's operating structure that is associated with large firms that have complicated business structures. This lack of transparency may result in a discount to the valuation of the overall firm (Weston, Chung & Siu, 1998; Nichols et al., 2014). Therefore, managers and shareholders who believe that their firm is undervalued by capital markets can use divestitures as a form of increasing an understanding of the firm's organisational structure (Weston et al., 1998). Managers and shareholders may be motivated to exit business units with the intention of reducing such information asymmetries.

The information asymmetry hypothesis argues that investors suffer from a lack of knowledge in the firm's operations due to lower transparency that is associated with complex organisational structures (Vijh, 2002; Lehtonen, 2008). An enhanced understanding of the firm's organisational structure may result in a reduction of valuation errors by external

analysts (Zuckerman, 2000). According to the information hypothesis, firms simplify corporate structures to manage risks associated with this lack of information which external analysts may suffer from (Chen & Guo, 2005; Nichols et al., 2014). Therefore, a sale of a portion of the firm's business or a separation of the firm's segments into independent businesses can minimise risks associated with incorrect valuations of the firm (Chen & Guo, 2005).

Additionally, the information transparency hypothesis argues that external analysts often view divestitures in a positive light due to their ability of increasing transparency and simplifying corporate structures that are difficult to understand. Therefore, the share price of the selling firm may improve subsequent to new information being available to market participants (Buckley, 1991). The information hypothesis is particularly important in spinoffs. Spin-offs have the ability to provide greater information to market participants (Nichols et al., 2014). Share issuances in spin-offs can signal that market participants have incorrectly valued the firm as a whole due to asymmetries in information (Schipper & Smith, 1986). Benefits of spin-offs include increased transparency in the newly formed firm and investors often view spin-offs as pure plays (Lehtonen, 2008). Higher share prices would be a result of the spin-off extracting a mismatch in value. Furthermore, from a signalling theory standpoint, sell-offs may be a cheaper form of financing rather than other capital-raising methods (Buckley, 1991). However, Klein (1983) found that returns from sell-offs are not significant unless the selling price is disclosed.

Schipper and Smith (1983) and Miles and Rosenfeld (1983) provide evidence of inconsistencies present in signalling theories and their effects on divestiture gains. Simpler corporate structures can result in a firm of higher quality as a result of the lowering of information asymmetries (Williamson, 1979). However, divestitures may impose additional costs to managers of the firm and this cost is differentially borne by managers in both higher and lower quality firms (Buckley, 1991). Williamson (1979) suggests that cost differentials provide constraints that discourage lower quality firms from false signals. If transaction costs are greater than the value of the firm, the divestiture may signal that the firm is of better quality than previously thought (Buckley, 1991). However, if the divestiture results in an increase in the overall risk of the firm, the sale may threaten other aspects of the firm (Buckley, 1991). This phenomenon is due to managers of higher-quality firms understanding that default is highly unlikely, but merely a representation of an increase in the firm's risk.

Divestitures can also reduce information asymmetries through enhancements to corporate focus (McConnell & Servaes, 1990). Difficulties experienced between shareholders, managers, and other market participants can result in lower valuations of the firm. Therefore, if asymmetries in information exist between the firm's manager, shareholders and other market participants, share issuances would be viewed as a signal that the firm is incorrectly valued (Schipper & Smith, 1986). Signalling theories may provide a better explanation of costs associated with external financing as investors are heterogeneous in nature. Investors have different preferences related to information conveyed by the firm and divestitures can provide vital information which may not have been apparent during the valuation process. Signalling theories argue that divestitures can indicate the existence of value that is hidden within the firm. Additionally, signalling theories primarily provide an understanding during periods where external investors have less access to information about the firm than their internal counterparts (that is firm insiders). According to signalling theories, external market participants value the firm as a whole (Buckley, 1991). Therefore, if the divestiture announcement signals hidden value, gains from a divestiture should continue to persist for shareholders even in cases where divestitures are not executed. However, the effects of divestiture announcements may be reversed when the divestiture is later terminated (Copeland, Lemgruber & Mayers, 1987). Therefore, the value of the divested segments previously held by a large parent can provide even more important information to market participants.

Chen and Guo (2005) found that means and (medians) of the information asymmetry variable in their sample reported results of 2.00 (1.00) for the full sample, 2.25 (1.00) for spin-offs and 1.99 (1.00) for sell-offs. Moreover, Chen and Guo (2005) found that when results reported in their study were adjusted, the average information asymmetry variable was significantly larger for sample firms than control firms. Additionally, multinomial logit analyses measuring the marginal effects of information asymmetry reported returns of 0.003 and 0.009 for spin-offs and sell-offs, respectively. However, these results proved not to be statistically significant. The information asymmetry variable did, however, prove to be significant at the 0.10 level for equity carve-outs which reported marginal effects of -0.013. Furthermore, model 1 of ordered logit regressions in Chen and Guo (2005) found that the information asymmetry variable which authors used in their study possessed statistical significance as a determinant of divestitures.

2.2.6 Governance Theories

Divestiture decisions can be motivated by external regulatory pressures. Legislation may be enacted by governmental, regulatory organisations or both agencies which draft such laws in order to enforce an environment that requires good governance by firms operating in their country (Collier & Roberts, 2013). Changes in governance requirements are particularly important in environments where new regulatory measures or restrictions affect the firm as a whole (Buckley, 1991). However, regulations may also affect a specific business unit or asset within the parent firm. If new legislation is adopted these regulations can sometimes result in the establishment of a stand-alone entity. Alternatively, they can provide additional motivation to comply with legislation resulting in the parent selling a segment within the business (Owen et. al., 2010). These measures are particularly important in over-diversified firms that have complex businesses structures. However, if firms ignore new regulations, they may be subjected to disciplinary actions which may result in reputational and/or financial risks. Bhana (2006) supports the view that new regulations may provide additional impetus to the divestiture decision. Therefore, governance theories relate to this phenomenon that results in firms employing divestitures as a form of complying with regulations that are imposed by external agencies.

Firms would cite their need to abide by requirements associated with "Codes of good practice" as a motivating factor behind the divestiture decision. However, some managers may oppose the divestiture decision. Managers may oppose a divestiture due to risks associated with a reduction to their personal wealth. Risks are related to lower remuneration packages and less managerial expertise associated with running smaller and undiversified firms that have fewer segments (Owen et. al., 2010). Managers may also oppose the divestiture decision in order to benefit from greater job security that is associated with the unique experience required in managing large firms which can provide them with greater job security. Additionally, managers would oppose divestitures due to any discomfort associated with an evolving firm (Buckley, 1991). Therefore, new regulation can provide an avenue for the parent firm's shareholders to exit from business units that no longer fit with the firm's strategic objectives. Shareholders would argue that a reconfiguration of the firm's organisational structure through the use of divestitures was motivated by a need to comply with changing regulatory requirements (Owen et. al., 2010). However, firms may also be opposed to divestitures due to risks associated with losing any competitive advantage borne

from benefits associated with economies of scale (Owen et. al., 2010). Therefore, regulations may be required to stimulate the breaking up conglomerates in order to increase competition in an economy.

Regulations have impacted markets dominated by large conglomerates. Regulators looking to foster a competitive business environment have instituted changes in legislation with the aim of reducing the existence of large conglomerates. For example in the US, the Banking Act of 1933 led to the separation of commercial banking activities from investment banking activities (Carpenter, E. Murphy & M. Murphy, 2016). JP Morgan & Co. was split into JP Morgan (the Commercial Bank) and Morgan Stanley (the securities firm). In South Africa, legislation such as the BBBEE Act of 2003, the King II Report and the Policy Document on Company Law Reform are pieces of legislation which have affected corporations. The King II report recommended that directors should consider the interests of other stakeholders in the daily management of their firm (Rossouw, 2002). This piece of legislation also included measures related to the long-term sustainability of the firm. According to legislation, if portions of the business were in opposition to the long-term health of the firm, managers and shareholders were required to exit these subsidiaries or business units. Code 101 in the "Codes of Good Practice on BBBEE" by the South African Department of Trade and Industry was another piece of legislation which affected divestiture activity in South Africa (Bhana, 2006). Legislation suggested that firms looking to obtain BBBEE status may do so through a sale of assets and businesses to individuals or organisations which met BBBEE requirements. This new directive differed from the equity ownership mandate related to previously disadvantaged individuals and may have influenced divestiture activity in South Africa (Bhana, 2006).

However, regulatory restrictions cannot be considered the singular reason for undergoing divestiture decisions, as shareholders would anticipate larger gains for divestitures. Haynes et al. (2002) found that resistance by managers of the firm to a divestiture may not be independent of external corporate governance requirements. Owen et al. (2010) reported that firms which possess a robust corporate governance culture have a greater probability of using divestitures in corporate restructuring programmes. Their study found that divestitures executed with the intention of abiding by corporate governance requirements had positive reactions by market participants. Additionally, Owen et al. (2010) found that firms which operate in highly competitive markets are more likely to divest. Their study also argued that

good internal and external corporate governance results in the best benefits for shareholders of a firm. Owen et al. (2010) reported that variables related to corporate governance such as; the number of independent board members and the number of block holders (shareholders with considerable amounts of equity in the firm) possessed statistical significance as determinants of divestitures. Furthermore, variables related to corporate governance which increased the likelihood of firms engaging in divestitures included; stronger shareholder rights, significant equity ownership by management and the presence of large boards (Owen et al., 2010).

Buchholtz, Lubatkin and O'Neill (1999) also provide evidence on the significance of corporate governance in complex corporate decisions. Authors report that additional corporate governance mechanisms may be imperative in firms considering divestitures. Buchholtz et al. (1999) also argue that governance requirements provide evidence of the heterogeneity in divestiture decisions. Schipper and Smith (1986) reported that 18 of the 58 spin-offs in their sample were motivated by regulatory or tax concerns. Additionally, Hite and Owers (1983) identified regulatory concerns as the primary reason for the divestment decision in their study, with 19 out of 123 spin-offs being motivated by governance requirements. Their study reported 2-day returns from spin-offs motivated by regulatory or legal issues which were consistent with Schipper and Smith (1986).

2.3 Divestitures and Firm Value – findings of prior studies

Studies investigating the impact of divestitures on firm value have reported mixed results. However, more studies have reported positive divestiture returns (Alexander et al, 1984; Jain, 1985; Allen, Lummer, McConnell & Reed, 1995; Daley et al., 1997; Lehtonen, 2008; Hillier et al., 2009; Owen et al., 2010; Nguyen, 2013; Dahlum & Tai, 2015). A few studies have reported negative returns over the short-term (Murray, 2000; Joosub et al, 2017). Additionally, other studies have reported negative returns over the long-term (Sudarsanam & Qian, 2007; Lee & Lin, 2008; Zakaria & Arnold, 2010; Nichols et al., 2014) and Fogh (2009) reported mixed results. Studies investigating the impact of divestitures over a short-term event window around the announcement date have reported positive excess returns (Alexander et al., 1984; Jain, 1985; Hite et al., 1987; Berger & Ofek, 1996; Rajan, Servaes & Zingales, 2000; Lehtonen, 2008; Hillier et al., 2009).

Hite et al. (1987) initially focused on the effects of sell-offs on shareholder wealth, finding that that gains from sell-offs are lower than spinoffs. Their study found that sell-offs reported gains of 1.7%. Hite et al. (1987) also found that sell-offs in a 100-day window reported an increase of 8.0% in the share price. Additionally, Jain (1985) reported gains of 0.7% from sell-offs using a 5-day event window. Studies initially focussing on voluntary spin-off announcements show significant share price increases over a 2-day event window. Both Hite and Owers (1983) and Miles and Rosenfeld (1983) reported gains of 3.3% received from spin-offs (Buckley, 1991). Copeland et al. (1987) further support this view by showing spinoffs reported excess returns of 5%. Rosenfeld (1984) reported excess returns of 9.7% for spin-offs using a 10 day period prior to the divestiture announcement. Hite and Owers (1983) reported excess returns of 7.3% for spin-offs using a 50 day event period. These findings were further supported by research utilising a 2-day (-1;0) event window.

Vijh (1994) and Allen et al. (1995) found that divestitures report positive returns of 2.90% (significant at the 0.05 level) and 2.15% (significant at the 0.01 level), respectively. Johnson, Klein and Thibodeaux (1995;) Seward and Walsh (1996;) and Daley et al. (1997) found divestitures to impact shareholder wealth positively reporting returns of 3.96%, 2.6% and 3.4%, respectively (all significant at the 0.01 level). Recent studies using a 2-day event window by Maxwell and Rao (2003) and Dahlum and Tai (2015) found that divestitures have a positive impact on firm value. Studies reported positive returns of 3.59% (0;+1) and 5.4% (-1;0), respectively. Both sets of results were significant at the 0.01 level.

Studies conducted in the US using a 3-day (-1;+1) event window have also found that divestitures have a positive impact on firm value. Desai and Jain (1999;) Krishnaswami and Subramaniam (1999;) and Owen et al. (2010) reported ARs of 3.84%, 3.28%, and 1.57%, respectively. Results from these studies were significant at the 0.01 level. Kirchmaier (2003) and Veld and Veld-Merkoulova (2004) investigated divestitures in Western Europe over a 3-day event window finding that divestitures reported positive returns of 5.4% and 2.62%, respectively (both significant at the 0.01 level). These findings were later supported by Sudarsanam and Qian (2007) and Lehtonen (2008) who tested divestiture returns using a 3-day (- 1;+1) event window. Findings reported positive returns of 4.82% in Sudarsanam and Qian (2007) and 1.83% in Lehtonen (2008). Results for both studies were significant at the 0.01 level. Nguyen (2013) studied divestiture returns for French firms finding that divestitures have a positive impact on firm value. This study found that divestitures result in

ARs of 0.138% using a 3- day (-1;+1) event window. Fogh (2009) conducted a study investigating the short-term effects of divestitures in Danish markets. However, this study reported mixed results. This study utilised event windows of 2 days (-1;0), 3 days (-1;+1), 28 days (-30;-2) prior to the divestiture announcement and 28 days (+2;-30) post the divestiture announcement. Fogh (2009) reported returns of 1.79%, 1.57%, -0.02% and -1.97%, respectively. However, findings in this study proved not to be statistically significant. Finally, Murray (2000) conducted a study assessing the wealth effects of spin-offs on companies listed on the London Stock Exchange (FTSE). This study reported negative returns of 0.19% using a 3-day (-1;+1) event window. However, these results proved not to be statistically significant.

Studies investigating the long-term effects of divestitures on shareholders in developed markets have found that divestitures have a negative impact on firm value. Sudarsanam and Qian (2007) studied divestitures in Europe and found that divestitures resulted in returns of -0.06%, -0.08%, -0.09%, for a period of 12, 24 and 36 months, respectively. However, all results in this study proved not to be statistically significant. Lee and Lin (2008) studied divestitures in the UK using the same event windows. Findings reported returns of -7.10%, -17.45% and -25.84% for a period of 12, 24 and 36 months, respectively. However, these results also proved not to be statistically significant.

Studies conducted in developing markets which focussed on countries in Asia have also reported positive divestiture returns. Sin and Ariff (2006) and Zakaria and Arnold (2010) investigated divestiture returns in Malaysia using a 3-day (-1;+1) event window to study the impact of divestitures on firm value. Sin and Ariff (2006) reported that divestitures have a positive impact on firm value, reporting positive returns of 1.80% (significant at the 0.10 level). Zakaria and Arnold (2010) also found that divestitures have a positive impact on firm value, reporting positive returns of 4.99% (significant at the 0.05 level). Sun (2012) investigated divestiture returns in Taiwan using a 3-day window. This study found that divestitures reported positive returns of 0.243% (significant at the 0.05 level). However, a study in Asia investigating the impact of divestitures on long-term shareholder wealth found that divestitures negatively impact shareholder wealth. Zakaria and Arnold (2010) investigated long-term divestiture returns in Malaysia reporting returns of -7.25%, -18.46, -18.74% for 12, 24 and 36 month periods, respectively. However, these results proved not to be statistically significant.

Studies investigating the impact of divestitures on firm value for shareholders of South African companies have reported mixed results. Blount and Davidson (1996) found that divestitures resulted in positive returns of 1.8% using a 59-day (-60;-1) event window. However, the results of this study proved not to be statistically significant. Bhana (2006) investigated found that divestitures reported positive ARs of 3.37% (significant at the 0.05 level) using a 6-day (-5;0) event window. Lugisani (2010) found that divestitures report positive ARs 5.82% by using an 8-day (-4;+3) event window. However, Joosub et al. (2017) reported negative abnormal returns of 12.47% which were not statistically significant. Studies focusing on the impact of divestitures on long-term firm value for South African shareholders have also reported mixed results. Bhana (2004) reported abnormal returns of 23.2%, 47.6% and 61.7% for 12, 24 and 36 month periods, respectively (all results were significant at the 0.01 level) using the market model. However, Nichols et al. (2014) reported negative divestiture returns over the long-term using Arbitrage Pricing Theory to determine cumulative abnormal returns. Their study of companies listed on the JSE reported ARs for a period analysing days that -250, +250, -500 and 500 days around the announcement date. The study reported returns of -0.89%, -1.27%, -0.65% and -1.01%, respectively (all results significant at the 0.01 level).

2.4 Determinants of Divestiture Returns

This section discusses the possible determinants of divestiture returns in South Africa by reviewing prior literature. The determinants discussed below include the efficiency effect, the size effect and, the leverage effect.

2.4.1 The Efficiency Effect

Firms use divestitures to improve firm efficiency. Improvements in efficiency can affect ARs received from divestitures in a positive manner; however, as efficiency theories were discussed in section 2.2, this section discusses methods related to the efficiency effect in line with Hillier et al. (2009). Hillier et al. (2009) argue that firms with lower levels of efficiency prior to the divestiture report superior ARs than firms with higher levels of efficiency prior to the divestiture. Therefore, this study will investigate the effects of firm efficiency (measured by ROA) on divestiture returns in line with methods employed by Hillier et al. (2009). Logit regressions and a comparison of ARs between firms with lower levels of efficiency and firms with higher efficiency levels were used to test the efficiency effect**.**

2.4.2 The Size Effect

Fama and French (1995) report that when earnings are scaled by the book value of equity, smaller firms have lower earnings on average relative to their larger counterparts (Barber & Lyon, 1996). However, studies report that the size of the divestiture relative to the overall size of the firm has a significant effect on divestiture returns (Zaima & Hearth, 1985; Klein, 1986; Mulherin & Boone, 2000). This view supported by several authors who argue that firm size affects divestiture returns (Schipper & Smith, 1983; Krishnaswami & Subramaniam, 1999; Miles & Rosenfeld, 1983).

Dahlum and Tai (2015) argue that if underperforming segments constrain the firm's value, disposal of an asset that is larger relative to the firm's overall size would result in a greater increase to the value of the firm. Gains would be larger as a result of the divestiture being of a larger proportion of the market capitalisation of the overall firm (Dahlum & Tai, 2015). Additionally, Hillier et al. (2009) found that smaller firms report higher abnormal returns in instances where divestitures are larger in value relative to the firm's overall size. These findings prove to be consistent with Dahlum and Tai (2015). Therefore, the firms' size may have an effect divestiture returns (Asquith, Robert & Mullins, 1983).

Dahlum and Tai (2015) found that divesting firms in their study enjoy significant positive ARs of 1.25% in general. However, smaller firms outperformed larger firms by 1.96%. Furthermore, smaller firms enjoyed higher ARs (2.47%) versus their larger counterparts (0.51%). Dahlum and Tai (2015) also found that smaller firms reported larger percentage gains when the absolute gain is fixed. Additionally, spin-offs which are larger relative to the size of the firm create more value for shareholders versus divestitures which are lower in size (Dahlum & Tai, 2015). Dahlum and Tai (2015) conclude that smaller firms on average reported larger gains versus their larger counterparts. This phenomenon is due to the divested asset being larger in size relative to the pre-announcement market capitalisation of the firm and having a larger effect on the selling firm. However, both Barber and Lyon (1996) and Hillier et al. (2009) argue that in determining the impact of divestitures on firm value, it is important to control for firm size. Therefore, to determine whether the firm's size has an effect on divestiture returns, this study also included a variable for firm size defined as

Ln(TA). Additionally, the firm's Ln(TA) was also used to determine control firms for firms in the sample portfolio.

2.4.3 The Leverage Effect

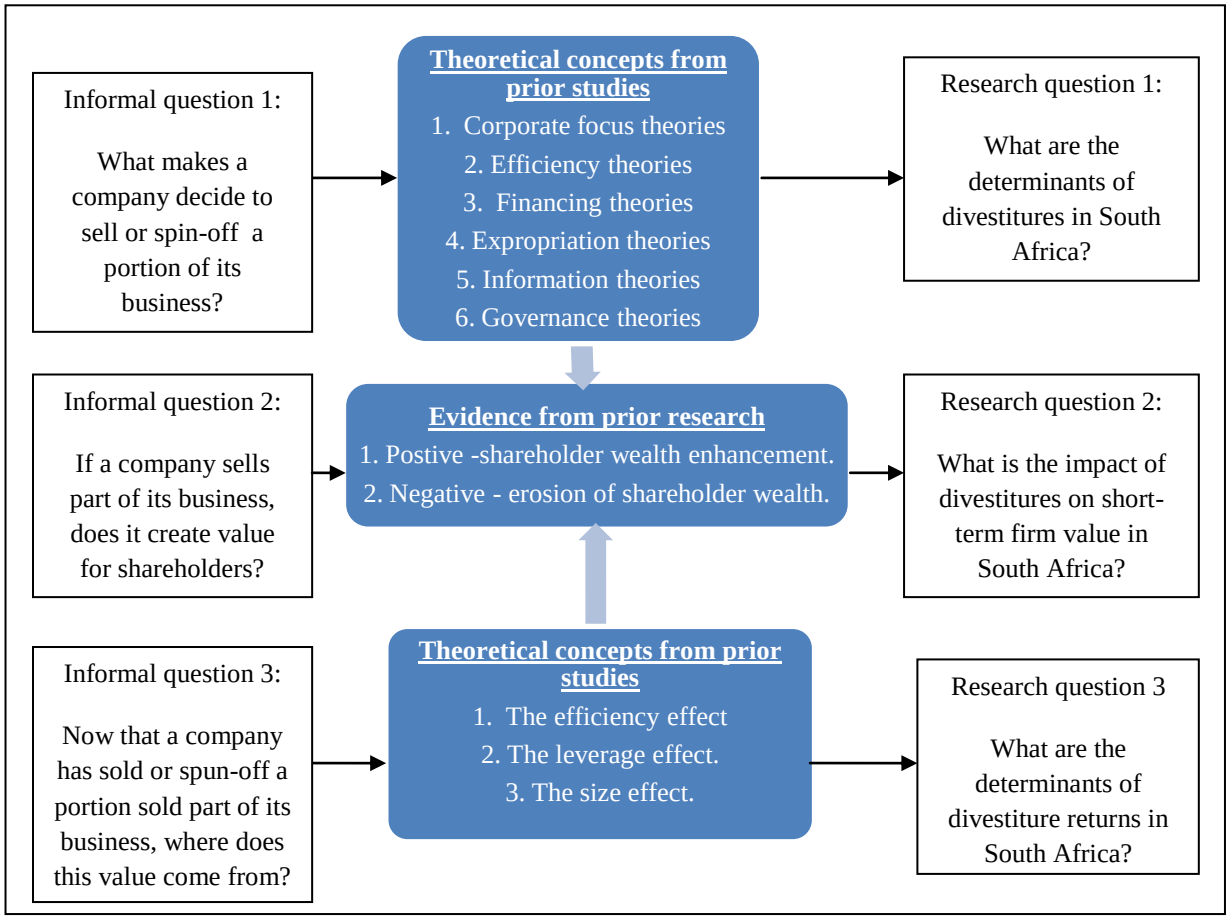
Hoskisson and Johnson (1996) found that high levels of leverage tend to foreshadow restructuring programmes. Large debt levels may be a symptom of resources which are allocated inefficiently or they may provide an indication of the firm's poor performance in general (Nguyen, 2013). Highly-geared firms suffer from larger default risk which can restrict the firm's ability to raise capital. Large debt levels on the balance sheet of the firm would increase the firm's cost of capital, which would negatively impact opportunities to raise capital which can be reinvested in projects that can generate value for the firm. In addition, large debt levels can lead to corporate restructures due to risks associated with an inability to repay financial obligations as firms experience stress on cash flows. Therefore, higher levels of debt on the firm's balance sheet can also be viewed as a source of value destruction (Nguyen, 2013).

As a result, the need to correct high debt levels may affect divestiture decisions. This is particularly important during periods when more conservative financial control mechanisms are enacted on the firm's operating activities (Nguyen, 2013). These additional measures enacted would be used as a form of protection by the firm's shareholders. However, selling a portion of the firm's operations can alleviate pressure on the firm's balance sheet which can impact the firm's cost of capital in a positive manner (Nguyen, 2013). Additionally, during periods where highly-leveraged firms experience material financial distress costs, divestitures can provide a cheaper source of financing if the firm cannot raise capital externally. Firms can then reinvest proceeds in value-enhancing projects or the reduction of the firm's debt. As a result, both managers and shareholders can benefit from divestitures. Nguyen (2013) found that highly-levered firms report superior ARs versus their lower-levered peers by using a 3-day (-1;+1) event window as the primary event window. Nguyen (2013) reported that highly-levered firms produced ARs of 0.56%, however, lower-levered firms reported ARs of 0.42%. Findings in this study reported that leverage levels in the year before the divestiture announcement possessed a statistically significant impact on divestiture returns. These findings were also consistent with Lui (2007) who reported that firms with higher leverage levels in Australia reported superior ARs versus their lower-levered peers. Nguyen (2013)

also found that the most significant day for ARs earned from divestitures by highly-levered firms is the day of the divestiture announcement. AARs of approximately 0.5% (significant at the 0.01 level) were reported by highly-levered firms on the day of the divestiture announcement. Additionally, Hillier et al. (2009) found that share price reactions to divestiture announcements are inversely related to leverage levels following a divestiture and Lasfer, Sudarsanam and Taffler (1996) found that financially stressed firms in the United States show ardent gains.

2.5 Summary of Literature Review and Formal statement of Hypotheses

Figure 1. Thesis outline



Source – Author**.**

Figure 2.1 summarises theories and findings related to divestitures which were reviewed in Chapter 2. Section 2.2 discusses theories related to the determinants of divestitures and reports that divestiture decisions may be the result of different reasons. A majority of the studies conducted in international markets argue that enhancing corporate focus, improving

corporate efficiency and reducing the firm's leverage levels are some of the most important determinants of divestiture decisions. Therefore to answer the first research provided in figure 2.1 the following hypothesis was tested:

i. Hypothesis 1:

$\boldsymbol{H_0}$: Enhancing corporate focus, improving firm efficiency and the firm's leverage levels are statistically significant determinants of divestitures in South Africa.

$\boldsymbol{H_a}$: Enhancing corporate focus, improving firm efficiency and the firm's leverage levels do not possess statistical significance as determinants of divestitures in South Africa.

Section 2.3 discusses prior literature related to the impact of divestitures on short-term firm value. Studies have reported mixed results in different markets including South Africa. However, the majority of studies have shown that divestitures have a positive impact on short-term firm value. Therefore, to the second research question provided in figure 2.1, the following hypothesis was tested:

ii. Hypothesis 2:

$\boldsymbol{H_0}$: Divestitures either have no impact or a negative impact on short-term firm value in South Africa.

$\boldsymbol{H_a}$: Divestitures have a positive impact on short-term firm value in South Africa resulting in shareholder wealth enhancement.

Finally, section 2.4 discusses prior literature related to the determinants of divestiture returns. Studies report that divestiture returns may not only stem from the divestiture decision itself but may be influenced by the effects of efficiency, leverage and firm size. Therefore, to answer the third research question, provided in figure 2.1, the following hypothesis was tested:

iii. Hypothesis 3:

$\boldsymbol{H_0}$: Efficiency, firm size or leverage in the year prior to the divestiture are not statistically significant determinants of divestiture returns in South Africa.

$\boldsymbol{H_a}$: Efficiency, firm size or leverage in the year prior to the divestiture are statistically significant determinants of divestiture returns in South Africa.

Finally, building on hypothesis three this study also investigated the relative performance between subsamples of the original portfolio. Prior literature has reported that firms with lower levels of corporate efficiency prior to the divestiture announcement report superior returns, firms with higher leverage prior to the divestiture announcement report superior abnormal returns and smaller firms prior to the divestiture announcement report higher returns. Therefore, to expand on the third research question, the following hypotheses were tested:

iv. Hypothesis 3(a):

$\boldsymbol{H_0}$: Firms with higher ROAs in South Africa report superior divestiture returns.

$\boldsymbol{H_a}$: Firms with lower ROAs in South Africa report superior divestiture returns.

v. Hypothesis 3(b):

$\boldsymbol{H_0}$: Larger firms in South Africa report superior divestiture returns.

$\boldsymbol{H_a}$: Smaller firms in South Africa report superior divestiture returns.

vi. Hypothesis 3(c):

$\boldsymbol{H_0}$: Lower-levered firms in South Africa report superior divestiture returns.

$\boldsymbol{H_a}$: Highly-levered firms in South Africa report superior divestiture returns.

3. DATA AND METHODOLOGY

3.1 Introduction

The study aims to investigate the determinants of divestiture decisions, the impact of divestitures on short-term firm value and the determinants of divestiture returns in South Africa. Section 3.2 discusses data and section 3.3 discusses the methods used to determine the effects of divestitures on shareholder wealth in South Africa.

3.2 Data

Section 3.2.1 details the process used to obtain data for the purposes of the study and discusses population and sample characteristics. Section 3.2.2 provides definitions of the variables used. Finally, section 3.2.3 summarises and discusses statistics related to the study.

3.2.1 Population and Sample Characteristics

Studies investigating divestitures analyse voluntary divestitures and their effects on shareholder wealth (Alexander et al., 1987; Bhana, 2006; Hiller et al., 2009). Additionally, Nichols et al. (2014) state that sells-offs and spin-offs are the most common forms of divestitures in South Africa. Therefore, this study discusses the effects of divestitures on shareholders of South African firms by analysing voluntary sell-offs and spin-offs. The population consists of all firms listed on the JSE between 2000 and 2014. This observation period is longer than periods previously used by studies in South Africa. Bhana (2006), observed divestitures for a period of 7 years (1995-2001), Lugisani (2010) covered a period of 4 years (2005-2009) and Joosub et al. (2017) observed a period of 9 years (2002-2011). Data collected for the purposes of the study followed the below process[1]:

i. A comprehensive list of companies listed on the JSE.
ii. A comprehensive list of companies that executed divestitures.
iii. Financial statements prior to the divestiture should be readily available as these will be used in analysing the determinants of divestiture decisions and the determinants of divestiture returns discussed in section 3.3.

[1] Data sources used in this study are detailed in *App. II-B (pg. 91-92).*

iv. Share price data for all companies to be included in the sample should be available for a period of at least 151 days prior to the divestiture announcement and a period of at least 30 days post the divestiture announcement.

A total of 476 transactions between 1994 and 2014 were provided. However, only 174 transactions fell within the observation period of 2000-2014. Additionally, to confirm whether these transactions were indeed divestitures, JSE Sens announcements were used to understand the details of each transaction provided. Following this, the following criterion was also applied in order for each transaction to be included in the sample:

i. The selling firm should be listed on the JSE.
ii. In line with Bhana (2006) and Hillier et al. (2009) transactions by financial firms were eliminated from the population.
iii. In order to calculate the parameters used in the estimation process of the market model following event study methodology, share price data should be available between t-151 and t+30.
iv. Share price data should also be available for a period of 30 days prior to the divestiture announcement and for a period of 30 days post the divestiture announcement.
v. To minimise the confounding effects of other restructuring events, firms which announced other contemporaneous restructuring programmes within the period of (t-30; t+30) were eliminated from the sample. This elimination process was adopted to reduce any contamination on divestiture returns associated with a further unbundling during the event window. Furthermore, this method is in line with Bates (2005;) Bhana (2006) and Nichols et al. (2014).
vi. If the parent firm sold the same business in tranches or over several transactions within the test period, the date of the last transaction was included as the reference date in the sample.
vii. Finally, financial statement data should be available. For example, sales figures were used as an independent variable to investigate whether corporate focus was a determinant of divestitures and *section 3.2.2* discusses all the variables used for the purposes of this study.

Applying the above process resulted in a final sample of 46 divestiture transactions which were included in the study.

3.2.2 Definitions of Variables

This section provides definitions of the variables used for the purposes of the study, in conjunction with defining control (non-divesting) firms that were used as matching firms. The inclusion of control firms in studying the determinants of divestiture decisions is consistent with Hillier et al. (2009).

3.2.2.1 Determinants of Divestitures

Corporate focus, efficiency and leverage were used as variables to investigate the determinants of divestitures. Information for these variables was obtained from financial statements of firms in both the sample portfolio and the control group. Prior to defining the variables used as determinants of divestitures, the process for obtaining matching (control) firms is discussed below.

i. Control Firms

To investigate the determinants of divestitures in South Africa, this study uses the logit regression model. This method calls for a divesting (sample) firm to be matched with a non-divesting (control) firm. Mitigation of the skewness bias was the motivating factor behind the use of control firms as opposed to a reference portfolio as the benchmark in return calculations (Gur-Gershgoren, Hughson & Zender, 2008). Additionally, the method of using matching firms and sample firms is similar to methods employed in previous studies (Hillier et al., 2009; Sun, 2012). Authors have also used control firms when investigating the effects of divestitures on shareholder wealth (Kaplan, 1989; Denis & Denis, 1993; DeGeorge & Zeckhauser, 1993).

For the purposes of this study control firms had to be of a similar size as the sample firm. Control firms were initially identified by obtaining comparable firms using Bloomberg's "relative valuation subgroup" tool. If this information was not available, then the sample firm's financial statements were used to identify a competitor firm. If this information was also unavailable, then the sample firm's JSE sector code was utilised to obtain comparable

firms within the same sector. After the identification of comparable firms, a firm with a Ln(TA) that is closest to that of the sample firm's Ln(TA) was chosen as the control firm. However, an additional requirement was also used for non-divesting firms according to Sun (2012). The control firm should not be engaged in any divestiture or restructuring activity during the same financial year as the divestiture transaction of the sample firm.

ii. Corporate focus

To measure corporate focus the study used two variables as proxies for corporate focus. In line with Berger and Ofek (1999) the firm's sales growth and CEO Turnover were both used to measure corporate focus. Berger and Ofek (1999) found that sales growth is a statistically significant determinant of divestitures. Additionally, CEO Turnover has been used in a number of studies on divestitures (Afshar et al., 1992; Berger & Ofek, 1999; Hillier et al., 2009).

Sales growth is defined as the percentage difference in sales between year *t*-2 and year *t*-1 relative to the divestiture announcement. This period to measure sales growth is consistent with the measurement period used by Berger and Ofek (1999). Gerald and Elisifa (2013) argue that sales growth is an important financial metric that firms take into consideration when formulating an overall corporate strategy. Shareholders and other stakeholders can use this metric to measure the overall performance of the firm. A sustained period of poor revenue levels can lead to an erosion of the firm's value. Therefore, by exercising their ownership rights and executing a divestiture in order to refocus the firm on its core revenue-generating segments by selling underperforming segments, shareholders would use poor sales growth as a form of corporate control.

CEO Turnover is defined as whether the firm's CEO has been replaced during a 12-month period that precedes the divestiture announcement up until 1 month after the divestiture announcement. This definition of CEO Turnover is consistent with Berger and Ofek (1999). During periods of sustained underperformance, shareholders may change the firm's leadership to exercise control on the firm. This is due to the incumbent CEO's reluctance to dispose of non-performing assets. Therefore, the inclusion of CEO Turnover as a measure of corporate focus takes into account the benefits associated with "the new CEO effect". New CEOs may be more objective in assessing the firm's performance and sell underperforming

assets during periods of corporate restructuring and restructure the firm's operating strategy (Dennis & Shome, 2005).

iii. Efficiency

Accounting based performance information was used to measure firm efficiency. To measure firm efficiency the firm's ROA and ROE were calculated in the year prior to the divestiture announcement and is consistent with methods employed by Daley et al. (1997;) Desai and Jain (1999;) and Hillier et al. (2009).

ROA is defined as the firm's EBITDA relative to its TA which is consistent with Hillier et al. (2009). ROE was also included in the study as it is a key measure of the firm's use of invested capital. ROE is defined as the firm's net profit for the year relative to its TE in a specific year. The definition of ROE is consistent with Hoskisson and Hitt (1990;) Hoskisson, Hitt, Johnson and Moesel (1993;) and Keats (1990).

iv. Size

Dahlum and Tai (2015) argue that firm size is a statistically significant determinant of divestiture returns. Therefore, firm size was also included in the study. The firm's Ln(TA) in the financial year preceding the divestiture announcement which was used as a proxy for firm size. Hoskisson, Johnson and Moesel (1994;) and Gill, Biger, Pai and Bhutani (2009) have supported the use of Ln(TA) as a proxy for firm size.

v. Leverage

Firms can use divestitures as a process to reduce financial constraints associated with high leverage levels (Nguyen, 2013). Therefore, leverage can be an important financial metric in divestiture decisions. For the purposes of this study, the D-t-A and D-t-E ratios of the firm in the year preceding the divestiture announcement were used as measures of long-term leverage. The inclusion of D-t-A and D-t-E to study whether leverage is a determinant of divestitures is consistent with a study conducted by Nguyen (2013). These figures were used to measure whether leverage is a statistically significant determinant of divestitures and whether leverage is a statistically significant determinant of divestiture returns. Additionally, short-term debt measures of the current ratio and the interest coverage ratio were also

calculated in the year prior to the divestiture announcement. Inclusion of these variables is in line with Hiller et al. (2009).

D-t-A is defined as the long-term debt of the firm relative to the book value of its TA. D-t-E is defined as the long-term debt of the firm relative to the book value of its TE. These definitions are consistent with Hillier et al. (2009). The D-t-A ratio may provide information related to how the firm financed prior acquisition activity (Hofstrand, 2013). Additionally, investors use this ratio to evaluate the firm's ability in meeting its financial obligations associated with risks related to a potential default (Hofstrand, 2013). The D-t-E ratio is of vital importance to the firm's investors as it reports the proportion of capital invested by the firm's equity holders versus other forms of debt (Hofstrand, 2013). Additionally, D-t-E provides shareholders with a measurement tool which distinguishes between what the firm actually borrowed versus other forms of liabilities (Hofstrand, 2013). Finally, the current ratio, defined as the current assets of the firm relative to its current liabilities, and the interest coverage ratio, defined as the interest expense of the firm relative to its PBIT were included. These measures provide information related to the short-term health of the overall firm.

3.2.2.2 Divestitures and Firm Value

CARs were used to measure the impact of divestitures on firm value. The process of obtaining CARs is discussed in *section 3.3*. Analysing CARs to determine the impact of divestitures on shareholder wealth is consistent with several studies (Afshar et al., 1992; Mulherin & Boone, 2000; Bhana, 2006; Hillier et al., 2009; Owen et al., 2010; Zakaria & Arnold, 2010; Nguyen, 2013).

i. CARs

The primary event window used to determine the impact of divestitures on firm value for the purposes of this study was a period of 5 days[2]. This event window provides a view of the effects that divestitures have on short-term firm value prior to the divestiture announcement and post the announcement. Additionally, this event window is in line with the 3rd event

[2] Cumulative abnormal returns for the 5-day event window are determined using the following formula: $CAR_t = CAR_{t-1} + AR_t$ for t = -2 to +2. The method used to obtain CARs is discussed in *section 3.3.3.*

window used by Dahlum and Tai (2015). This event window also provides an alternative to event windows used in studies conducted in South Africa (Bhana, 2006; Lugisani, 2010; Joosub et al., 2017). The study also used alternative event windows of 6 days (-5;0) which measures share price movements prior to the divestiture announcement. This event window was also used in Bhana (2006). Additionally, a 3-day (-1;+1) event window was also used as an alternative event window for the purposes of this study. This event window has been used to study the impact of divestitures on firm value by several studies (Sudarsanam & Qian, 2007; Owen et al., 2010; Sun, 2012; Nguyen, 2013) and measures the impact of divestitures on firm value before and after the divestiture announcement. Finally, a 21-day (-10;+10) event window was also used for the purposes of this study which is consistent with Nguyen (2013).

3.2.2.3 Determinants of Divestiture Returns

Methods used to study the determinants of divestiture returns are in line with Hillier et al. (2009). To study the efficiency effect the firm's ROA was utilised, to measure the leverage effect the firm's D-t-A was used, and to measure the size effect the firm's Ln(TA) was utilised. Cross-sectional regressions were conducted using these variables which were obtained from financial statement data in the year before the divestiture announcement. Additionally, comparisons of ARs using subsamples of the original sample portfolio were conducted in line with methods employed by Miles and Rosenfeld (1983). Miles and Rosenfeld used this method to measure the performance of spin-offs between smaller and larger firms.

3.2.3 Summary Statistics

Table 3.1: Frequency distribution of divestiture announcements

Year	No. of transactions	Percentage of the sample	Year	No. of transactions	Percentage of the sample
2000	13	28%	**2008**	3	7%
2001	4	9%	**2009**	1	2%
2002	3	7%	**2010**	5	11%
2003	2	4%	**2011**	5	11%
2004	1	2%	**2012**	2	4%
2005	1	2%	**2013**	0	0%

2006	1	2%	**2014**	0	0%
2007	5	11%			
Total				**46**	**100%**

Table 3.2: Industry or JSE sector of sample firms

Industry	**No. of observation**	**Industry**	**No. of observation**
Technology & Hardware	3	Consumer Discretionary - Consumer Services	1
Mining & Industrials	9	Consumer Discretionary - Educational Services	1
Communications - Media & Entertainment	1	Transport & Automotive	5
Information Technology Business	5	Office Electronics and Products	1
Telecommunications	1	General Industrials	8
Real Estate	3	Consumer Discretionary - Retail Department Stores	2
Industrial Engineering	1	Consumer Discretionary - Food & Beverages	5
Total			**46**

Table 3.1 presents information related to divestiture activity in South Africa during the 15-year observation period studied. Table 3.1 shows that most of the divestitures executed during the observation period occurred between 2000 and 2002. This period coincides with an economic downturn in South Africa between 2000 and 2001[3]. Additionally, this period coincides with an economic downturn in global markets following the dot com bubble burst. Increasing corporate focus on the firm's core revenue-generating segments could have been a motivating factor behind divestiture decisions, as companies would have experienced stresses to profitability during this period. Following this period divestiture activity subsided in line with an economic recovery between 2002 and 2007. However, divestiture activity rebounded between 2007 and 2008. This period experienced the negative effects associated with the subprime mortgage crisis which had a negative impact on global financial markets.

[3] See South Africa GDP graph in *App. II*-C *(p. 95).*

Additionally, the South African economy also experienced a downturn during this period[3]; however, not to the same extent as global markets.

Interestingly, the South African economy grew between 2010 and 2011[3]. However, divestiture activity grew during this period. Therefore, enhancing corporate focus may not have been a motivating factor in divestitures during this period. Divestitures during this period may have been motivated by the need to reinvest capital in the firm or may have been motivated by the need to diversify revenue streams. Companies would have been motivated to sell portions of the firm to use proceeds from divestitures as a form of capital used to expand into new markets; thereby, diversifying their revenue streams. On the other hand, proceeds may have been used to repay financial obligations. Another viewpoint would support the need to repay shareholders or increase the concentration of shareholder by using share buy-back strategies. Table 3.2 shows that industries which had the largest number of divestitures in South Africa during the observation period were from the mining industry and the general industrials sectors. These were followed by companies in the transport and automotive, food and beverage and information technology sectors, which are some of South Africa's largest sectors which contribute to economic output.

3.3 Methodology

3.3.1 Introduction

This section discusses the methods used in answering this study's research questions. Section 3.3.1 discusses methods used to investigate the determinants of divestitures. Section 3.3.2 discusses event study methodology used to investigate the impact of divestitures on short-term firm value for the purposes of this study. Finally, section 3.3.3 discusses methods utilised in studying the determinants of divestiture returns in South Africa.

3.3.2 Determinants of Divestitures

The study begins by investigating which determinants had a statistically significant impact on divestiture decisions in South Africa. The study begins by conducting univariate tests, which are followed by an analysis using logit regressions. Analysing results from both univariate tests and logit regressions is consistent with methods employed by Hillier et al. (2009). In order to study which variables had an effect on divestiture decisions "Sale" which denotes

whether a firm executed a divestiture was set as the dependent variable. Explanatory variables were then regressed against the dependent variable using logit regressions. This method is in line with Hillier et al. (2009). Additionally, studies have found that firm size has a positive relation to announcement returns (Klein, 1986; Dahlum & Tai, 2015). Therefore, this study also includes a variable for firm size as a control measure. The formula for this test can be expressed in a linear equation as follows:

$$Sale_j = \alpha + \beta_1 FOCUS + \beta_2 Efficiency + \beta_3 DEBT + \beta_4 SIZE + \varepsilon_j .... \quad (3.1)$$

Where:

- SALE is a binary variable that takes the value of one for a sample firm and zero for control firms.
- DEBT and Efficiency are as previously defined.
- FOCUS is based on both Sales growth and CEO Turnover as previously defined
- SIZE is based on Ln(TA) as previously defined.

3.3.3 Divestitures and Firm Value

To measure the effects of divestitures on short-term firm value, the study used event study methodology according to Fama, Fisher, Jensen and Roll (1969). Fama et al. (1969) used event study methodology to investigate the effects of stock-splits on firm share prices. However, event study methodology continues to be the primary method used for measuring stock-mean and cumulative-mean abnormal returns (Khotari & Warner, 2006). Other methods such as the Buy-and-Hold approach, calendar-time portfolio abnormal returns and the calendar-time regression model have also been used in event study methodology. However, these methods suffer from statistical issues (Qian, 2006).

Event study methodology using the market model has been used by several studies to determine the impact of divestitures on short-term firm value (Alexander et al., 1984; Afshar et al., 1992; Mulherin & Boone, 2000; Bhana, 2006; Lehtonen, 2008; Fogh, 2009; Hillier et al., 2009; Lugisani, 2010; Owen et al., 2010; Nguyen, 2013; Joosub et al., 2017). However, to determine whether returns significantly impact firm value involves a methodical process which requires the following steps:

i. Determination of the estimation period,
ii. Setting the event window or windows,
iii. Calculation of average abnormal returns (AARs) by using the market model,
iv. Calculating cumulative abnormal returns (CARs),
v. Conducting statistical tests on both average abnormal returns and cumulative abnormal returns to determine the statistical significance of returns obtained in the study.

3.3.3.1 The Estimation Period

For returns to be considered "normal" an estimation period is utilised to provide a proxy or benchmark for the return. However, scholars have differing opinions regarding the duration of the estimation period. MacKinlay (1997) argues that an estimation period of 120 days is sufficient. Benninga and Voetman (2008) argue that 252 trading days are sufficient for an estimation period. Strong (1992) also shows that estimation periods as short as 60 days and as long as 600 days can also be used. However, to minimise systemic risk changes, the estimation period should be long enough to reduce daily return variances to a minimum but should also be short enough to take into account price differentials of a recent period (Strong, 1992). Therefore, this study follows MacKinlay (1997) by using a period between *t*-151 and *t*-31 to estimate the parameters used for the OLS regression.

3.3.3.2 The Event window

After establishing the estimation period, the event window used in calculating ARs for the purposes of the study was determined. Bhana (2006) argues that the event window should observe returns a few days prior to the divestiture (event) announcement and/or a few days post the event date. Keown and Pinkerton (1981) argue that leakages of information tend to occur prior to an event (divestiture announcement). Their argument supports the view that market rumours may have an influence on abnormal returns. Additionally, a disadvantage of using extended event windows is that market reactions may be less distinct due to the inclusion of more "normal" trading days (Bhana, 2006). This can affect any results seen in the movement of share prices. Following these recommendations, an event window of 5 days was used as the primary event window for the purposes of this study. This period includes 2 days before the event date and 2 days following the event date. This event window is also in line with the 3rd event window of Dahlum and Tai (2015) and provides an alternative window

from prior studies conducted in South Africa (Blount & Davidson, 1992; Bhana, 2006; Lugisani, 2010; Joosub et al., 2017).

3.3.3.3 Abnormal Returns (ARs)

Prior to calculating AARs which are used to obtain CARs that study the impact of divestitures on short-term firm value, ARs for each security in the sample need to be calculated on each day during the estimation period. Bhana (2006) argues that a filtering out of share price movements due to normal circumstances needs to be completed. Therefore, the method used to determine ARs for the purposes of this study is in line with methods employed by Bhana (2006). However, the market model approach states that the return for each security can be expressed as a linear function of the contemporaneous return on the market portfolio and a firm-specific stochastic term (Bhana, 2006).

Coefficients for the market model were estimated over a 120-day period (*t*-151; *t*-31) with the announcement date (*t*=0) for each security being used as the reference date for each security. Residual (ARs) were then calculated for the primary event window of 5 days, defined as 2 days prior to the divestiture announcement and 2 days post the divestiture announcement. The AR on any day should not be significantly different from zero unless investors receive new information that affects the intrinsic value of a share. Any significant ARs observed can be attributed to the information content of the divestiture (Bhana, 2006). Additionally, ARs were also calculated for all the alternative event windows in this study. The market model is defined as the residual difference between the actual return on day *t* and the expected return on day *t* using the parameters. This can be expressed as a linear equation as follows:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) + e_{it} \quad (3.2)$$

Where:

- AR_{it} represents the abnormal return for security *i* on day *t*.
- R_{it} is the actual stock market return of security *i* on day *t*. R_{mt} is the rate of return of the market portfolio represented by the JSE All Share Index on day *t*. α_i and β_i are the market model coefficients for company *i*. This method incorporates an event period that includes both pre and post the divestiture announcement.
- Residuals for the event windows are then calculated for 5 days (*t*-2;*t*+2), 3 days (*t*-1;*t*+1), 6 days (*t*-5;*t*=0) and 21 days (*t*-10;*t*+10). Any significant abnormal returns observed in the measurement period can be attributed to the information content

of the divestiture itself (Bhana, 2006). Additionally, the measured abnormal return on any day in any of the measurement periods should not be significantly different from zero unless investors receive new information that affects the intrinsic value of a share Bhana (2006).

3.3.3.4 Average Abnormal Returns (AARs)

After calculating ARs for each security, AARs across the entire sample were calculated for each day pre and post the divestiture announcement. The method used to calculate AARs is consistent with Bhana (2006) and can be expressed as follows:

$$AAR_t = \frac{\sum_{i=1}^{N} \mathrm{AR_{it}}}{\mathrm{N}} \tag{3.3}$$

Where:

- $\mathrm{AR_{it}} = \text{Abnormal return of company } i \text{ on day } t.$
- N = number of firms in the sample portfolio (46 sample firms.)

i. Statistical Tests: AARs

Statistical significance for AARs is inferred by calculating t-statistics which is in line with Brown and Warner (1980, 1985). This method is also consistent with methods of determining t-statistics used by Afshar et al. (1992) and Bhana (2006). The equation for determining t-statistics can be expressed as follows:

$$\mathrm{AAR_t} / \hat{s}\mathrm{AAR_t} \tag{3.4}$$

Where:

- $\mathrm{AAR_t} = \sum_{j=1}^{n} \mathrm{AR_{it}}/\mathrm{N}$ (3.4.1)
- $\hat{s}(\mathrm{AAR_t}) = \{\frac{\sum_{t=-151}^{-31}(\mathrm{AAR_t} - \overline{\mathrm{AAR}})^2}{119}\}^{1/2}$ (3.4.2)
- And $\overline{AAR} = \left(\frac{1}{120}\right)\sum_{t=-151}^{-31} AAR_t$ (3.4.3)

Where:

- N is the number of sell-off announcements in the sample portfolio.

3.3.3.5 Cumulative Average Abnormal Returns (CARs)

CARs for each day were calculated for each day of the event window, after obtaining AARs for the entire sample on each day in the event window. Malatesta and Thompson (1985) and Eckbo (2014) argue that CARs only receive an economic benefit from the unanticipated component which is captured. Partial anticipation constitutes a portion of the wealth creation effects prior to the occurrence of the event such as a divestiture (Eckbo, 2014). However, observing the impact of divestitures on firm value by using CARs is in line with studies conducted by Afshar et al. (1992;) Hillier et al. (2009;) Bhana (2006;) Sun (2012;) and Nguyen (2013). CARs are defined as the sum of all the AARs for the event window and can be expressed in a linear equation as follows:

$$\mathrm{CAR}_i(t_1; t_2) = \sum_{t=t_1}^{r_2} \mathrm{AR}_{it} \qquad (3.5)$$

Where:

- t_1 and t_2 represent the beginning and the end of the event window, respectively.

Alternatively the above formula may be expressed in the following manner:

$$\mathrm{CAR}_t = \mathrm{CAR}_{t-1} + \mathrm{AR}_t \text{ for } t = -2 \text{ to } +2 \ldots \qquad (3.5.1)$$

Source: Bhana (2006)

i. Statistical Tests: CARs

Statistical significance is inferred by calculating t-statistics. The determination of test statistics for CARs followed methods employed by Brown and Warner (1980, 1985;) Afshar et al. (1992;) Bhana (2006;) and Lehtonen (2008) which can be expressed as follows:

$$t = \frac{\mathrm{CAR}_t}{(T_2 - T_1 + 1)^{0.5} \hat{s}(\mathrm{AAR}_t)} \qquad (3.6)$$

3.3.3.6 Robustness Test

BHARs were used as a test for robustness for the purposes of this study. Using BHARs as a test for robustness is in line with methods employed Desai and Jain (1999;) Owen et al. (2010;) and Nichols et al. (2014). BHARs were calculated for each firm in the entire sample.

BHARs were then analysed for both the primary event window and for all alternative event windows used for the purposes of this study. BHARs can be expressed as follows:

$$BHAR_{it} = \prod_{t=1}^{T}[1 + R_{it}] - \prod_{t=1}^{T}[1 + E(R_{it})] = \prod_{t=1}^{T}[1 + AR_{it}] \quad , \qquad (3.7)$$

Source: Nichols, Rosenberg, Majoni & Mukanjari (2014).

Where:

- T represents the number of days being examined for each event window.
- $E[R_{it}]$ represents the expected return for company *i* at time *t*, and the expected return was calculated using historical returns defined as the average of the returns of company *i* on time *t*-151 *to t*-31.

3.3.4 Determinants of Divestiture Returns

A majority of prior studies have discussed the benefits of divestitures on short-term shareholder wealth (Alexander et al., 1984; Afshar et al., 1992; Desai & Jain; 1999; Mulherin & Boone, 2000; Bhana, 2006; Hillier et al., 2009; Lee & Madhavan, 2010; Owen et al., 2010; Nguyen, 2013). However, to contribute to the body of knowledge on divestiture research in South Africa, this study goes further by studying the determinants of divestiture returns. To study the determinants of divestiture returns, CARs of the sample portfolio were set as the dependent variable in line with Bhana (2006) and Hillier et al. (2009). A cross-sectional analysis of OLS regressions was then conducted using ROA (a measure of corporate efficiency) and D-t-A (a measure of leverage) as explanatory variables. Additionally, studies report that firm size has a positive relation to divestiture returns and that firm size has an effect on divestiture returns (Klein, 1986; Dahlum & Tai, 2015). Therefore, a measure for firm size was also included as an explanatory variable and this can be in a linear equation as follows:

$$CAR_t = \alpha + \beta_1 Efficiency_{t-1} + \beta_2 Size_{t-1} + \beta_3 Leverage_{t-1} + \varepsilon_j \ldots \qquad (3.8)$$

Where:

- CAR is defined as the cumulative abnormal returns in the 5-day (-2;+2) event window.

- Efficiency is measured as ROA of the firm, as previously defined.
- Debt is measured as D-t-A, as previously defined.
- Size is measured as Ln(TA), as previously defined.

Additionally, to provide a further understanding related to the determinants of divestiture returns in South Africa this study also analysed CARs using subsamples from the original portfolio of divesting firms (*see section 4.4.2*). Comparisons of ARs between smaller firms and larger firms, firms with higher ROAs and firms with lower ROAs, and highly-levered firms versus lower-levered firms were conducted in this study in line with methods employed by Miles and Rosenfeld (1983). Miles and Rosenfeld (1983) compared ARs between smaller and larger spin-offs in their study. Their study found that that larger spin-offs (defined as the divested asset having an equity value at least 10% as large as the market value of the parent firm's common stock) reported superior ARs than smaller spin-offs (defined as the divested asset having an equity value lower than 10% of the parent firm's equity value).

4. RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents results obtained in the study and discusses findings related to the determinants of divestitures and divestiture returns in South Africa. Section 4.2 presents and discusses findings related to the determinants of divestiture transactions. Section 4.3 presents and discusses findings related to the impact of divestitures on short-term firm value. Finally, section 4.4 provides an analysis of the determinants of divestiture returns.

4.2 Determinants of Divestitures

To answer the first research question, this section discusses findings from tests conducted to answer the following hypothesis:

- Hypothesis 1:

$\boldsymbol{H_0}$: Enhancing corporate focus, improving firm efficiency and the firm's leverage levels are statistically significant determinants of divestitures in South Africa.

$\boldsymbol{H_a}$: Enhancing corporate focus, improving firm efficiency and the firm's leverage levels do not possess statistical significance as determinants of divestitures in South Africa.

Section 4.2.1 presents descriptive statistics of the eight variables used as determinants of divestitures. Table 4.2.1 Panel A, discusses the findings of univariate tests conducted which relate to corporate focus as a determinant of divestitures in South Africa. Table 4.2.1 Panel B discusses the findings of univariate tests conducted which relate to firm efficiency as a determinant of divestitures in South Africa. Table 4.2.1 Panel C discusses the findings of univariate tests conducted which relate to leverage as a determinant of divestitures in South Africa. Following this, section 4.2.2 discusses findings from logit regressions conducted to determine which variables possess statistical significance as determinants of divestitures in South Africa[4].

[4] Logit regressions were conducted using IBM SPSS version 25. For detailed results, see *App. III-B (p. 96-101).*

4.2.1 Descriptive Statistics

Table 4.2.1 Panel A: Descriptive statistics related to corporate focus

Variable		Sample Firms	Control Firms
Panel A: Corporate Focus Characteristics			
Corporate Focus			
Sales Growth	Mean	2.5051	0.2324
	Median	[0.1373]	[0.1459]
	25%	-1.76%	-1.04%
	75%	41.69%	34.29%
	% positive	69.57%	67.39%
	Variance	20427.1%	12.50%
CEO Turnover	Mean	0.1957***	0.0217***
	Median	[0.0000]***	[0.0000]***
	25%	0.00	0.00
	75%	1.00	1.00
	% positive	17.39%	2.17%
	Variance	14.69%	2.17%

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. Control firms are selected based on the method discussed in section 3.2.2.1. Means and medians are reported following Hillier et al. (2009). *P-values* were calculated using the two-tailed sample method. *T*-statistics were determined using the difference in means between the sample and control portfolio and the method is detailed in *App. III.A (pg. 95-96).*

Sales growth is defined as the percentage difference in the sales figure between t-2 and t-1. Table 4.2.1 Panel A illustrates that sample firms reported superior sales growth than firms in the control group (2.5051 vs. 0.2324). However, sales growth did not prove to be a statistically significant determinant of divestiture transactions in South Africa. These findings are consistent with Berger and Ofek (1999) who reported that sales growth is not a statistically significant determinant of divestiture decisions. Findings suggest that divestiture decisions in South Africa may have been influenced by another reason than an improvement in revenue figures.

Table 4.2.1 Panel A also reports findings related to CEO Turnover. Divesting (sample) firms report a significantly higher CEO Turnover figure than non-divesting (control) firms. Findings are consistent with Afshar et al. (1992) who argue that CEO Turnover should be

higher for sample firms than CEO Turnover for control firms. Additionally, CEO Turnover proved to be a statistically significant (at the 0.01 level) determinant of divestiture transactions. Findings are consistent with John and Ofek (1995;) Denis and Shome (2005;) and Hillier et al. (2009), and provide evidence that a change in leadership of the firm remains an important determinant of divestiture decisions. Changes to leadership suggest that shareholders of divesting firms look to take advantage of the new CEO effect. Dennis and Shome (2005) argue that employing a new CEO can lead to enhancement of the firm's performance. Incumbent CEOs may be afraid to admit past mistakes; however, new CEOs may be objective in assessing the overall corporate structure. Therefore, new CEOs in highly-diversified firms tend to sell off divisions which do not possess a strategic fit with the overall firm than their counterparts that are already employed by the firm (John & Ofek, 1995).

Table 4.2.1 Panel B: Descriptive statistics related to efficiency

Variable		Sample Firms	Control Firms
Panel B: Operating characteristics			
Efficiency			
ROA	Mean	0.0608***	0.1996***
	Median	[0.1031]***	[0.1373]***
	25%	1.53%	8.75%
	75%	20.10%	28.79%
	% positive	80.43%	91.30%
	Variance	10.00%	3.25%
ROE	Mean	-0.3576	0.2163
	Median	[0.1139]	[0.2110]
	25%	3.81%	7.19%
	75%	29.44%	30.95%
	% positive	80.43%	86.96%
	Variance	634.05%	7.72%

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. Control firms are selected based on the method discussed in section 3.2.2.1. Means and medians are reported following Hillier et al. (2009). *P-values* were calculated using the two-tailed sample method. *T*-statistics were determined using the difference in means between the sample and control portfolio and the method is detailed in *App. III-A (pg. 95-96).*

Table 4.2.1 Panel B reports findings related to efficiency. ROA is defined as the firm's EBITDA relative to its TA in the year preceding the divestiture announcement. Divesting (sample) firms reported a lower ROA versus firms in the control group (0.0608 vs. 0.1996). Findings are consistent with John and Ofek (1995) and suggest that sample firms performed less efficiently than those of the control group. Additionally, ROA proved to be a statistically significant (at the 0.01 level) determinant of divestiture decisions. Findings are consistent with Hillier et al. (2009) and provide evidence that firm efficiency remains an important consideration in divestiture decisions. Findings suggest that firms look to enhance efficiency with the aim of improving firm value. Firms may sell non-performing assets or can create an independent entity through a spin-off in order to remove any non-performing assets from its balance sheet.

Table 4.2.1 Panel B also reports findings related to ROE. ROE is defined as the ratio of net profit of the firm for the year relative to a firm's TE in the year before the divestiture announcement. Hoskisson and Hitt (1990) argue that shareholders would possess a keen interest in the ROE of the firm, as ROE reports how the firm generate returns from capital invested its equity holders. Findings from Table 4.2.1 Panel B show that sample firms reported a negative ROE of 0.3576 and firms in the control group reported a positive ROE of 0.2163. Findings suggest that shareholders of sample firms may use divestitures as part of a strategy aiming to enhance the firm's operations in order to enhance returns from capital which they invested. However, ROE did not prove to be a statistically significant determinant of divestiture decisions.

Table 4.2.1 Panel C: Descriptive statistics related to leverage

Variable		Sample Firms	Control Firms
Panel C: Financial Health			
LT DEBT			
Debt to Assets	Mean	0.1656***	0.2765***
	Median	[0.1130]***	[0.1616]***
	25%	2.77%	10.01%
	75%	23.21%	22.01%
	% positive	86.96%	100.00%
	Variance	3.07%	22.20%
Debt to Equity	Mean	1.3203**	0.2483**

	Median	[0.2045]**	[0.2510]**
	25%	5.79%	16.38%
	75%	53.99%	36.22%
	% positive	86.96%	97.83%
	Variance	2104.79%	1419.84%
ST DEBT			
Current ratio	Mean	3.4770	1.7098
	Median	1.5145	1.5221
	25%	1.2031	1.2485
	75%	3.4806	2.0021
	% positive	100%	100%
	Variance	2086.80%	60.96%
Interest coverage ratio	Mean	0.1994	0.2012
	Median	0.0702	0.0581
	25%	0.0004	0.0077
	75%	0.2954	0.2050
	% positive	73.91%	84.78%
	Variance	20.40%	80.15%

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. Control firms are selected based on the method discussed in section 3.2.2.1. Means and medians are reported following Hillier et al. (2009). *P-values* were calculated using the two-tailed sample method. *T*-statistics were determined using the difference in means between the sample and control portfolio and the method is detailed in *App. III-A (pg. 95-96).*

Table 4.2.1 Panel C reports findings related to leverage in the year prior to the divestiture. D-t-A is defined as the ratio of the firm's long-term debt to the book value of its TA. D-t-A for divesting firms was lower than the control group's D-t-A (0.1656 vs. 0.2765). The study expected to report a higher D-t-A for sample firms than a D-t-A for firms in the control group. However, D-t-A still proved to be a significant determinant of divestiture decisions (significant at the 0.01 level) which is in line with Lasfer et al. (1996) and Nguyen (2013). Findings suggest that managers and shareholders of sample firms consider the firm's leverage to be an important consideration in divestiture decisions. Additionally, findings support the view that firms can divest any assets/business units as a form of alleviating the burden of debt on a firm's balance sheet. With less debt on the balance sheet, firms could raise capital in external markets or could utilise proceeds received from divestitures to invest in value-generating projects. Firms could also utilise divestiture proceeds to repay any financial obligations that the firm has in order to alleviate pressure on the firm's balance sheet.

Table 4.2.1 Panel C also reports related to D-t-E in the year preceding the divestiture announcement. D-t-E is defined as the firm's long-term debt versus the book value of its TE. Sample firms reported a higher D-t-E versus control firms (1.3203 vs. 0.2483) and D-t-E proved to be a statistically significant determinant of divestitures (significant at the 0.05 level). Findings are consistent with Lasfer et al. (1996) and Nguyen (2013) and suggest that leverage continues to be an important consideration in divestiture decisions. The D-t-E distinguishes between the firm's borrowings and invested capital from equity holders. Therefore, shareholders would be keenly aware of the firm's D-t-E as it provides an indication of how the firm finances any investments or operating activities.

Finally, the current ratio, defined as the firm's current assets versus its current liabilities, and the interest coverage ratio, defined as the ratio of between the firm's interest expense and its PBIT were also reported in Table 4.2.1 Panel C. However, both measures proved not to be statistically significant.

4.2.2 Logit Regressions

As seen in Table 4.2.1 univariate tests report that CEO Turnover, ROA, D-t-E and D-t-A prove to be the only statistically significant determinants of divestitures. Findings confirm that corporate focus, efficiency, and long-term leverage prove to be important determinants of the divestitures for firms in South Africa. However, to better understand which variables affect the divestiture decision, this study conducted logit regressions using all eight variables as explanatory variables for the decision to divest or not (that is "sale" was set as the dependent variable).

Table 4.2.2: Logit regressions - determinants of divestiture transactions

	Model 1	**Model 2**	**Model 3**
Intercept	-0.043 (0.981)	-0.500 (0.758)	0.255 (0.872)
Sales growth	-0.003 (0.514)		
CEO Turnover	-2.396 (0.053)	-2.370 (0.032)**	
ROA	0.023 (0.207)	0.027 (0.034)**	0.028 (0.028)**
ROE	0.546 (0.609)		
Debt to Equity	-0.108 (0.324)	-0.128 (0.198)	-0.133 (0.182)
Debt to Assets	1.900 (0.310)	2.061 (0.151)	3.186 (0.083)
Current Ratio	-0.296 (0.310)		

Interest coverage ratio	0.270 (0.467)		
Ln(TA)	0.020 (0.866)	-0.005 (0.963)	-0.076 (0.478)
Log likelihood (Probability)	95.762 (0.000)	106.690 (0.001)	113.927 (0.009)
No. Of Observation	96	96	96
Pearson Chi-Square	81.891 (0.483)	89.075 (0.253)	86.140 (0.299)

***;**;* denotes significance at the 1%; 5% and 10% level, respectively.

Table 4.2.2 presents the results of logit regressions used in investigating the determinants of divestiture in South Africa. Table 4.2.2 reports that CEO Turnover is a statistically significant determinant of divestitures (significant at the 0.05 level) and findings confirm results from univariate tests conducted in *section 4.2.1*. Findings are also consistent with Berger and Ofek (1999;) Denis and Shome (2005;) and Hillier et al. (2009). Results of logit regressions support the view that changing the firm's CEO remains a measure of corporate control that is important in divestiture decisions for shareholders of South African firms. Weisbach (1995) argues that new CEO's are more objective in the decision to sell or spin-off non-performing business units or assets than CEOs who are already in the employ of sample firms. Additionally, Hillier et al. (2009) suggest that as a response to decreases in agency costs of managerial discretion, corporate control threats can lead to divestitures. These may occur in the form of explicit threats to managerial control. Managers can then use divestitures to decrease risks associated with the managerial labour market (as per Berger, Ofek & Yermack, 1997), the takeover market (as per Martin & McConnell, 1991; Zweibel, 1996), lender monitoring (as per Jensen, 1986) and product market competition (as per Hart, 1983).

Logit regressions also confirm that ROA is a statistically significant determinant of divestitures for firms in South Africa (significant at the 0.05 level). Findings are in line with univariate tests conducted in *section 4.2.1*. Additionally, findings are consistent with studies conducted by Berger and Ofek (1992;) Lasfer et al. (1996;) and Hillier et al (2009) who report that firm efficiency is a statistically significant determinant of divestitures. Findings suggest that management and shareholders of the firm would exit non-performing segments through the use of divestitures, with the intention of improving the firm's efficiency. Additionally, exiting non-performing assets can be a signal to market participants that the firm intends to improve performance in order to enhance the firm's value.

Finally, long-term leverage (denoted by D-t-A and D-t-E), short-term leverage (denoted by the current ratio and the interest coverage ratio), and firm size (denoted by LnTA) did not prove to be statistically significant determinants of divestiture decisions in South Africa.

4.2.3 Findings of tests conducted related to determinants of divestitures results

Findings of univariate tests found CEO Turnover, ROA, D-t-A, and D-t-E to be statistically significant determinants of divestitures. However, logit regressions only found CEO Turnover and ROA to be statistically significant determinants of divestitures. Therefore, according to logit regressions, the null hypothesis for hypothesis 1 of this study can be accepted. Findings suggest that enhancing corporate focus and improving the firm's efficiency are statistically significant determinants of divestitures in South Africa.

4.3 Divestitures and Firm Value

This section discusses findings related to the impact of divestitures on short-term firm value in South Africa. To determine the impact of divestitures on short-term firm value, this study used the market model according to event study methodology. The study analysed daily AARs and CARs which is consistent with methods employed by several studies (Bhana, 2006; Lehtonen, 2008; Fogh, 2009; Hillier et al., 2009). Findings of the market model are presented and discussed in section 4.3.1. Additionally, a test for robustness using BHARs was used to determine the validity of results obtained from using the market model. Using BHARs as a test for robustness is in line with methods employed by Hillier et al. (2009) and Nichols et al. (2014). Findings of BHARs are presented and discussed in section 4.3.2 and both methods were used to test the following hypothesis:

- Hypothesis 2:

$\boldsymbol{H_0}$: Divestitures either have no impact or a negative impact on short-term firm value in South Africa.

$\boldsymbol{H_a}$: Divestitures have a positive impact on short-term firm value in South Africa resulting in shareholder wealth enhancement.

4.3.1 Analysis of the 5-day event window

Table 4.3.1 Panel A presents ARs for the 5-day event window and Table 4.3.1 Panel B present descriptive statistics of ARs for the entire sample.

Table 4.3.1 Panel A: AARs and CARs for the 5-day (-2;+2) event window

Panel A	***CARs and AARs for the sample portfolio***		
Event Day	**AAR**	**Test Statistic**	**CAR**
-2	0.8030%	1.38	0.8030%
-1	1.0794%	1.86*	1.8824%
0	**0.5785%**	**1.00**	**2.4609%**
+1	-0.6952%	-1.20	1.7657%
+2	-1.6341%	-2.82***	0.1317%

*;**;*** denotes significance at the 10%, 5% and 1% level, respectively. Statistical significance is based on 120 degrees of freedom for the estimation window between *t*-151 and *t*-31. Test statistics were calculated according to methods employed by Brown and Warner (1980), and are consistent with methods employed by Miles and Rosenfeld (1983;) and Bhana (2006).

Table 4.3.1 Panel B: Descriptive statistics for the 5-day (-2;+2) event window

Panel B	***CARs and AARs for the sample portfolio***				
	Median	**% positive**	**Variance of Returns**	**25%**	**75%**
Abnormal Return day t - 2	0.3081%	60.87%	0.1547%	-0.2978%	1.0168%
Abnormal Return day t - 1	-0.1112%	45.65%	1.5744%	-0.5914%	1.5992%
Abnormal Return day t	**-0.0049%**	**47.83%**	**0.3378%**	**-0.7679%**	**0.8857%**
Abnormal Return day t + 1	-0.5781%	36.96%	0.1061%	-1.4550%	0.3101%
Abnormal Return day t + 2	-0.1038%	45.65%	1.0776%	-0.9521%	0.4007%

Table 4.3.1 Panel A shows that divesting (sample) firms reported CARs of 0.1317% during the 5-day event window with results proving to be significant at the 0.01 level. Results support findings of studies conducted in South Africa which report that divestitures have a positive effect on shareholders of South African firms in the short-term (Blount & Davidson, 1996; Bhana, 2006). However, findings do not agree with Joosub et al. (2017) who report that divestitures have a negative effect on shareholders in South Africa over the short term. Table 4.3.1 Panel A also reports that CARs increased between day *t*-2 and day *t*-1, suggesting that

market participants anticipating a divestiture announcement, view divestitures in a positive manner as begin to absorb information in trading activity related to an impending announcement. Additionally, Table 4.3.1 Panel B reports that the number of companies reporting positive ARs constituted a large percentage of the sample portfolio in the days preceding the divestiture announcement. Table 4.3.1 shows that 60.87% of firms in the sample portfolio had positive returns on day *t*-2, 45.65% of firms in the sample portfolio reported positive returns on day *t*-1, and 47.83% of firms in the sample portfolio reported positive returns on the day of the divestiture announcement. Following the announcement date markets began to absorb all information related to the divestiture announcement and ARs began to decline; however, divestitures had a positive impact on firm value during the primary event window. Results are also consistent with findings from prior research conducted in developed markets which provide evidence of the positive effects of divestitures on short-term firm value (Alexander et al., 1984; Krishnaswami & Subramaniam, 1999; Sudarsanam & Qian, 2007; Lehtonen, 2008; Fogh, 2009; Hillier et al., 2009; Owen et al., 2010; Nguyen, 2013; Dahlum & Tai, 2015). However, findings do not agree with Murray (2000) who reported that divestitures have a negative impact on firm value. Results of this study also support findings from studies which report that divestitures positively impact firm value in other developing markets (Sin & Ariff, 2006; Zakaria & Arnold, 2010; Sun, 2012).

The study also investigated the effects of divestitures on short-term firm value by using alternative event windows of 3 days and 6 days. Event windows reported ARs of 0.9628% percent (significant at the 0.10 level on day *t*-1) and 2.2180% (significant at the 0.10 level on day *t*-1), for the 3-day and 6-day event window, respectively. Results from both alternative event windows support findings reported for the primary event window of 5 days and support the view that some market participants still view divestitures as positive NPV projects (Dahlum & Tai, 2015). Finally, the study also reported ARs using a 21-day event window[5]. The study reported ARs of -3.0148% (significant at the 0.05 level) for the 21-day event window. Findings from an extended event window to 21 days found that divestitures can result in an erosion of shareholder wealth over a longer period. These results are consistent with findings by Nichols et al. (2014) who find that divestitures lead to an erosion of shareholder wealth in the long term for South African shareholders.

4.3.2 Robustness test

[5] Detailed results of AARs and CARs for the 6-day (-5;0), 3-day (-1;+1) and 21-day (-10;+10) event windows are provided in *App. III-C (pg. 101-103).*

Testing the robustness of results obtained in section 4.3.1 was conducted by determining BHARs. This method is consistent with studies conducted by Bhana (2006) and Nichols et al. (2014).

4.3.2.1 Buy-And-Hold Returns

Table 4.3.2: Buy-And-Hold Returns (BHAR) for the 5-day (-2;+2) event window

Panel A	***BHARs for the sample portfolio***		
Event Day	**Cumulative BHAR**	**Test Statistic**	**Daily Average BHAR**
-2	0.7189%	1.22	0.7189%
-1	2.7315%	3.41***	2.0126%
0	**3.5094%**	**1.32**	**0.7779%**
+1	3.0171%	-0.83	-0.4923%
+2	1.5466%	-2.49**	-1.4705%

*;**;*** denotes significance at the 10%, 5% and 1% level, respectively.

Table 4.3.2 shows that BHARs for the sample portfolio reported ARs of 1.5466% (significant at the 0.05 level) for the 5-day event window. Results support findings from the market model discussed in section 4.3.1. Results also confirm that divestitures have a positive impact on short-term firm value in South Africa. Additionally, BHARs for the 3-day and 6-day event window reported ARs of 2.2982% (significant at the 0.01 level on day *t*-1), and 3.7410% (significant at the 0.01 level on day *t*-1), respectively. These results also support findings obtained using the market model which are discussed in section 4.3.1 and are consistent with findings from Bhana (2006). Finally, the 21-day event window reported ARs of -1.2581% (significant at the 0.10 level) which are in line with returns using the market model[6].

4.3.3 Findings of tests conducted related to divestitures and firm value

CARs for the 5-day, 3-day and 6-day event windows using the market model report that divestitures possess a statistically significant positive impact on short-term firm value. Additionally, findings of the 5-day, 3-day and 6-day event windows using BHARs also show that divestitures possess a statistically significant positive impact short-term on firm value. Therefore, the null hypothesis for hypothesis 2 cannot be accepted.

[6] Detailed results of BHARs for the 6-day (-5;0), 3-day (-1;+1) and 21-day (-10;+10) event window are provided in *App. III-C (pg. 101-103).*

4.4 Determinants of Divestiture Returns

This section seeks to provide an understanding of the determinants of divestiture returns in South Africa. The study uses regressions based on the overall sample portfolio to determine which variables have an effect on divestiture returns in South Africa. However, this section also compares ARs based on subsamples of the original portfolio to test whether firm efficiency, size, and leverage have an effect on divestiture returns in South Africa. Section 4.4.1 presents and discusses findings from cross-sectional regressions conducted. Section 4.4.2 presents and discusses findings from subsamples of the original sample portfolio used to investigate the effects on firm size, efficiency, and leverage on divestiture returns.

4.4.1 Cross-sectional regression analysis

A cross-sectional regression was conducted in line methods employed by Hillier et al. (2009;) Dahlum and Tai (2015;) and Nguyen (2013). Table 4.4.1 discusses findings from cross-sectional regression tests conducted used to test the following hypothesis[7]:

- Hypothesis 3:

H_0: Efficiency, firm size or leverage in the year prior to the divestiture are not statistically significant determinants of divestiture returns in South Africa.

H_a: Efficiency, firm size or leverage in the year prior to the divestiture are statistically significant determinants of divestiture returns in South Africa.

Table 4.4.1: Cross-sectional regression analysis – Determinants of Divestiture returns

	Estimated coefficients			
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Constant	0.00935	0.01187	0.02236	0.03547
	(0.64)	(2.50)**	(11.10)***	(1.35)
ROA_{t-1}	-0.00047	-0.01075		
	(-1.21)	(-1.51)		
Debt to $Assets_{t-1}$	-0.05101		-0.04753	

[7] OLS regressions were conducted using EViews Version 10 Student Version Lite. For detailed results see *App. III-E (pg. 105-106).*

	(-3.80)***		(-7.32)***	
$Ln(TA)_{t-1}$	0.00090			-0.00153
	(0.92)			(-0.83)
R^2	0.94	0.29	0.87	0.21

*;**;*** denotes significance at the 10%, 5% and 1% level, respectively. The table reports results of OLS regressions using White's correction which tests robust standard errors as the best linear unbiased estimator (BLUE). *T-statistics* are reported in parentheses.

Table 4.4.1 reports that D-t-A is the only statistically significant determinant of divestiture returns in South Africa (significant at the 0.01 level). These findings are consistent with Nguyen (2013) who argues that leverage is a statistically significant determinant of divestiture returns. Table 4.4.1 reports that firm efficiency and firm size did not prove to be statistically significant determinants of divestiture returns. However, to provide greater insight related to the determinants of divestiture returns in South Africa, section 4.4.2 conducted a further analysis by comparing ARs between subsample of the original sample portfolio.

4.4.2 Comparisons of abnormal returns between subsamples

Section 4.4.2 presents and discusses findings related to comparisons of ARs conducted using subsamples of the original sample portfolio. Table 4.4.2 Panel A compares the ARs of firms with lower levels of efficiency and the ARs of firms with higher levels of efficiency. Table 4.4.2 Panel B compares the ARs of smaller firms with the ARs of larger firms and Table 4.4.2 Panel C compares the ARs of highly-levered firms with the ARs of firms with lower levels of leverage.

4.4.2.1 Comparison of abnormal returns between subsamples - Testing the Efficiency Effect

Hillier et al. (2009) argue that firms with lower levels of efficiency benefit more from divestitures than firms with higher levels of efficiency. Efficiency is measured by the sample firm's ROA in the year preceding the divestiture announcement. Table 4.4.2 Panel A presents CARs and AARs of between firms with lower efficiency and firms with higher efficiency taken from the portfolio of divesting firms. These were used to test the following hypothesis:

- Hypothesis 3(a):

H_0: Firms with higher ROAs in South Africa report superior divestiture returns.

H_a: Firms with lower ROAs in South Africa report superior divestiture returns

Table 4.4.2 Panel A: CARs and AARs of firms with lower efficiency vs. firms with higher efficiency

Panel A: Efficiency	***Return on Assets Mean =6.08% (full sample = 46 observations)***					
	High-efficiency firms		**Low-efficiency firms**			
	Subsample 1 (N=16)		**Subsample 2 (N=30)**			
Event Day	**CAR**	**AAR**	**CAR**	**AAR**	**CAR (H-L)**	**t-statistic**
t-2	0.8653% (-0.01)	0.8653% (0.85)	0.7697% (-0.02)	0.7697% (1.12)	0.0956%	0.10
t-1	-1.7911% (0.03)	-2.6564% (-2.60)	3.8416% (-0.09)	3.0719% (4.46)***	-5.6327%	-3.25***
t	**-1.6314% (0.03)**	**0.1597% (0.16)**	**4.6435% (-0.11)**	**0.8019% (1.16)**	**-6.2749%**	**-4.56*** **
t+1	-1.1810% (0.02)	0.4504% (0.44)	3.3373% (-0.08)	-1.3061% (-1.89)	-4.5184%	-3.67***
t+2	-4.8562% (0.08)	-3.6752% (-3.59)***	2.7919% (-0.05)	-0.5455% (-0.53)	-7.6481%	-2.00*

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. *P*-values are determined assuming equal unknown variances as per Miles and Rosenfeld (1983). This test is appropriate under the assumption that we are dealing with independent random samples from two normal populations having the same unknown variance. The t-value with 44 degrees of freedom is presented in parentheses and the formula for obtaining test statistics is provided in *App. III-F (p. 107).*

Table 4.4.2 Panel A shows that firms with lower efficiency reported superior ARs (2.7919%) than firms with higher levels of efficiency (-4.8562%). Findings are statistically significant at the 0.01 level on the day of the announcement and significant at the 0.10 level 2 days after the divestiture announcement. Findings suggest that firms with lower levels of efficiency relative to their peers benefit more from divestitures. Findings also suggest that firms with lower levels of efficiency would be aware that divestitures can be a form of improving the firm's efficiency that can lead to an enhancement in shareholder wealth.

4.4.2.2 Comparison of abnormal returns between subsamples - Testing the Size Effect

Dahlum and Tai (2015) argue that smaller firms report superior divestiture returns than larger firms. To measure firm size, the firm's Ln(TA) in the year preceding the divestiture

announcement was used as a proxy for the size of the firm. Table 4.4.2 Panel B presents CARs and AARs between larger firms and smaller firms taken from the portfolio of divesting firms. These were used to test the following hypothesis:

- Hypothesis 3(b):

H_0: Larger firms in South Africa report superior divestiture returns.

H_a: Smaller firms in South Africa report superior divestiture returns.

Table 4.4.2 Panel B: CARs and AARs of larger and smaller firms

Panel B: Size			***Ln(TA) Mean = 15.03 (N=46 observations)***			
	Larger Firms		**Smaller firms**			
	Subsample 1 (N=40)		**Subsample 2 (N=6)**			
Event Day	**CAR**	**AAR**	**CAR**	**AAR**	**CAR (L-S)**	**t-statistic**
t-2	0.8601% (-0.02)	0.8601% (1.37)	0.4225% (-0.01)	0.4225% (0.31)	0.4375%	0.34
t-1	2.1531% (-0.06)	1.2931% (2.05)	0.0779% (0.00)	-0.3447% (-0.25)	2.0753%	0.84
T	**3.2138% (-0.09)**	**1.0607% (1.68)**	**-2.5584% (0.03)**	**-2.6362% (-1.94)**	**5.7722%**	**2.90*** **
t+1	2.4792% (-0.07)	-0.7346% (-1.17)	-2.9910% (0.04)	-0.4326% (-0.32)	5.4702%	3.14***
t-+2	2.3200% (-0.06)	-0.1593% (-0.25)	-14.4571% (0.39)	-11.4661% (-18.20)***	16.7771%	3.02***

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. *P*-values are determined assuming equal unknown variances as per Miles and Rosenfeld (1983). This test is appropriate under the assumption that we are dealing with independent random samples from two normal populations having the same unknown variance. The t-value with 44 degrees of freedom is presented in parentheses and the formula for obtaining test statistics is provided in *App. III-F (p. 107).*

Table 4.4.2 Panel B shows that smaller firms reported negative ARs of 14.4571% from divestitures and larger firms reported gains of 2.3200% from divestitures. Findings were significant at the 0.01 level on the day of the announcement and 2 days post the divestiture announcement. However, findings are not in line with arguments by Dahlum and Tai (2015), suggesting that this phenomenon may be unique to South Africa. Results suggest that divestitures by larger firms in South Africa are seen in a positive light than divestitures by smaller firms. Reasons could include that larger firms in South Africa may have longer

operating periods which can result in market participants having more certainty that if the divestiture's intended result of improving firm value does not occur; the parent firm can rebound from a transaction that has a negative impact on firm value. Alternatively, larger firm may have more diverse revenue streams than smaller firms and if the divestiture does not have the intended effect of enhancing firm value, the large parent may be able to rebound from a negative transaction.

4.4.2.3 Comparison of abnormal returns between subsamples - Testing the Leverage Effect

Nguyen (2013) argues that firms with higher leverage levels report superior divestiture returns than lower-levered firms. For the purposes of this study, leverage is defined as the firm's D-t-A in the year preceding the divestiture announcement. Table 4.4.2 Panel C presents CARs and AARs between highly-levered firms and firms with lower levels of leverage taken from the portfolio of divesting firms. These were used to test the following hypothesis:

- Hypothesis 3(c):

$\boldsymbol{H_0}$: Lower-levered firms in South Africa report superior divestiture returns.

$\boldsymbol{H_a}$: Highly-levered firms in South Africa report superior divestiture returns.

Table 4.4.2 Panel C: CARs and AARs of highly-levered and lower-levered firms

Panel C: Leverage			***Debt to Assets Mean = 0.17 (full sample = 46 observations)***			
	Highly-leveraged firms		**Lower-leveraged firms**			
	Subsample 1 (N=5)		**Subsample 2 (N=41)**			
Event Day	**CAR**	**AAR**	**CAR**	**AAR**	**CAR (H-L)**	**t-statistic**
t-2	1.6902% (-0.02)	1.6902% (1.11)	0.6948% (-0.02)	0.6948% (1.15)	0.9954%	0.71
t-1	4.3721% (-0.05)	2.6818% (1.76)	1.5788% (-0.04)	0.8840% (1.46)	2.7932%	1.04
T	**5.7733% (-0.06)**	**1.4012% (0.92)**	**2.0570% (-0.06)**	**0.4781% (0.79)**	**3.7163%**	**1.73***
t+1	2.7796% (-0.03)	-2.9937% (-1.97)	1.6421% (-0.05)	-0.4149% (-0.69)	1.1375%	0.61
t+2	2.1658% (-0.02)	-0.6138% (-0.40)	-0.1164% (0.00)	-1.7585% (-1.16)	2.2822%	0.38

***;**;* denotes significance at the 1%; 5% and 10% level, respectively. *P*-values are determined assuming equal unknown variances as per Miles and Rosenfeld (1983). This test is appropriate under the assumption that

we are dealing with independent random samples from two normal populations having the same unknown variance. The t-value with 44 degrees of freedom is presented in parentheses and the formula for obtaining test statistics is provided in *App. III-F (p. 107).*

Table 4.4.2 Panel C shows that highly-levered firms report ARs of 2.1658% and lower-levered firms report ARs of negative 0.1164%. Results of ARs between highly-levered and lower-levered firms were significant at the 0.10 level on the day of the announcement. Findings are consistent with Nguyen (2013) who argues that highly-levered firms benefit more from divestitures than firms with lower levels of leverage and that shareholders of highly-levered firms view divestitures as a form of unlocking value. Results in Table 4.4.2 Panel C suggest that divesting firms would exit non-performing business units or assets which have a negative impact on the firm's overall financial health. Proceeds received from divestitures can then be allocated to repaying existing debt on the firm's balance sheet, or divestiture proceeds can be allocated to projects which create value for the firm.

4.4.3 Findings of tests conducted related to determinants of divestitures returns

Section 4.4 conducted statistical tests to determine the determinants of divestiture returns. Cross-sectional regressions found that only leverage has a statistically significant effect on divestiture returns. Therefore, for hypothesis 3 the null hypothesis which states that leverage, firm size and efficiency do not have an effect on divestiture returns cannot be accepted. Section 4.4.2 conducted tests to compare ARs using subsamples of the original sample portfolio. Section 4.4.2.1 found that firms with lower levels of efficiency reported superior divestiture returns that firms with higher levels of efficiency. Therefore, the null hypothesis for hypothesis 3(a) which states that firms with higher levels of efficiency report superior divestiture returns cannot be accepted. Section 4.4.2.2 found that larger firms reported superior divestiture returns than smaller firms, therefore, the null hypothesis for hypothesis 3(b) which states that larger firms report superior divestiture returns was accepted. Section 4.4.2.3 found that highly-levered firms reported superior divestiture returns than lower-levered firms, therefore, the null hypothesis for hypothesis 3(c) which states that lower-levered firms report superior divestiture returns cannot be accepted.

5. CONCLUSION

Divestitures continue to be an important process which companies in South Africa can use for enhancing firm value. Companies in South Africa continue to use divestitures as a means of enhancing firm efficiency, increasing corporate focus and improving the financial health of the firm. From a theoretical standpoint, research related to corporate divestitures remains an important focus area for scholars that look to understand the impact of divestitures on firm value in South Africa. The impact of divestitures on firm value also remains an important topic for shareholders and managers in South Africa looking to understand the benefits of divestitures on their firms. Therefore, this study aimed to provide an understanding of; (i) the determinants of divestitures for South African companies, (ii) the impact of divestitures on short-term firm value for South African shareholders, and (iii) what the determinants of divestiture returns are for South African firms. In order to assess the determinants of divestitures and divestiture returns in South Africa, this study focused on voluntary divestitures related to 46 sell-offs and spin-offs of companies listed on the JSE between 2000 and 2014.

5.1 Summary of findings and relevance of the study

Logit regressions reported that CEO Turnover, a measure of corporate focus, and ROA, a measure of firm efficiency, to be statistically significant determinants of divestitures in South Africa. However, sales growth (a measure of corporate focus), ROE (a measure of firm efficiency), D-t-A, D-t-E, the current ratio, and the interest coverage ratio (all measures of leverage) proved not to be statistically significant determinants of divestitures in South Africa. Findings suggest that corporate focus theories related to CEO Turnover, which argue that the incumbent CEO is more apprehensive in selling any non-performing assets or business units are evident in South Africa. The decision not to sell or spin-off these assets would result in the firm losing out on benefits associated with any refocusing programmes. Shareholders can decide to exercise their voting powers by replacing the incumbent CEO with a new CEO in order to take advantage of the "new CEO effect". According to the "new CEO effect", a new CEO views the firm's operations in an objective manner and is more inclined to sell any non-performing divisions or assets which no longer possess a strategic fit with the firm's overall financial strategy (Denis & Shome, 2005).

The study also found that the firm's ROA remains an important determinant of divestitures. Findings support efficiency theories which argue that divestitures can be an important process that companies can use to enhance firm value. Shareholders can use the firm's ROA as a financial metric that indicates how the firm utilises its asset base to generate returns that enhance the firm's value. If the firm's ROA continues to be lower than what shareholders require, shareholders can use this metric as a form of implementing restructuring programmes that include divestitures. Additionally, improving any negative synergies that are present in the firm can enhance overall operational performance which can lead to improvements in firm value (Owen et al., 2010).

The study also found that divestitures have a positive impact on short-term firm value that is statistically significant. Findings are consistent with studies conducted in both developed and Asian markets. Additionally, findings are consistent with studies conducted in South Africa which report that divestitures have a positive effect on shareholder wealth (Blount & Davidson, 1996; Bhana 2006; Lugisani, 2010). Findings suggest that selling non-performing assets or segments in the firm can result in enhancements to shareholder's personal wealth. Findings also suggest that divestitures can also reduce any employment risk for managers of the firm. Managers can use findings from this study as a way of motivating restructuring programmes that use divestitures to improve the firm's value. Shareholders can also use findings from this study to gain a better understanding of the impact of divestitures on firm value, should they be wary of using divestitures as a form of creating value.

The study also investigated the determinants of divestiture returns in South Africa. Cross-sectional regressions only found that leverage (measured by D-t-A) has a statistically significant effect on divestiture returns in South Africa. Findings are consistent with a study conducted assessing the effects of leverage on divestiture returns for shareholders of French firms (Nguyen, 2013). The study also found that efficiency (measured by ROA) and firm size (measured by LnTA), do not have a statistically significant effect on divestiture returns. However, in order to further understand the effects of firm efficiency, size, and leverage on divestiture returns the study went further by observing ARs based on subsamples of the original sample portfolio. The study found that firms with lower levels of efficiency reported superior ARS than firms with higher efficiency levels. Findings are consistent with a study conducted by Hillier et al. (2009). The study also found that highly-levered firms reported superior ARs than firms with lower leverage levels. Findings are consistent with Nguyen

(2013). Finally, this study found that larger firms report superior ARs than smaller firms. However, these findings do not agree with a study conducted by Dahlum and Tai (2015). Findings related to firm size indicate that South Africa has a unique operating environment that views divestitures by larger firms with more enthusiasm than divestitures by smaller firms.

5.2 Limitations to the study

The study used event study methodology according to Fama et al. (1969). A key assumption of this approach is that markets operate in an efficient manner. However, markets may not always operate efficiently in the "real-world". Additionally, event study methodology may not isolate the benefits of divestitures. Event study methodology only reports short-run estimates which can be sensitive to any changes in the design of a research study which looks to identify the impact of divestitures on shareholder wealth (Jordan, 2012). Another limitation encountered in the study relates to obtaining divestiture transaction information. As there is no central repository for information related to divestitures in South Africa, this study used multiple sources, such as JSE Sens announcements to confirm whether transactions provided by service providers were indeed divestitures.

A further limitation encountered in this study relates to firm size. This study used the firm's Ln(TA) as a proxy for firm size. Dang and Li (2018) argue that different proxies for size capture different effects related to firm size. Measures such as enterprise value (market capitalisation plus net debt); the number of employees, total profits or net assets (TA less TL) could have been used as proxies for firm size. Using these measures as a proxy for firm size would alter statistical tests related to the determinants of divestiture transactions and matching (control) firms used for the purposes of this study. However, Griffin and Mahon (1997) and Dang and Li (2018) argue that Ln(TA) can be used as a proxy for firm size. Finally, South African firms often possess corporate structures which involve business activities in several sectors. Therefore, choosing the correct control firm proved to be a difficult process.

5.3 Suggestions for further research

Research related to divestitures in South Africa remains minimal. This leaves much room for scholars to explore and expand on the body of knowledge. First, the observation period of this study ended in 2014. Therefore, a more recent observation can be used to investigate the

impact of divestitures on firm value. Second, this study combined both forms of divestitures in the sample portfolio. Therefore, studies can investigate the impact of spin-offs and sell-offs separately to determine which form of divestitures have a greater impact on short-term shareholder wealth.

Third, potential research may focus on further extending the determinants of divestiture announcements. Studies may only focus on understanding the effects of governance factors on the divestiture decision. A study of this nature would follow research conducted by Owen et al. (2010) and could include corporate governance measures such as; Board size, CEO incentive schemes, and Board composition to measure which variable have a statistically significant impact on divestiture decisions. Additionally, legislation specific to South Africa such as the Competition Act, BBBEE Act, and King reports could be included in a study of the effects of governance requirements on divestiture activity. Fourth, studies may also focus only on the effects of corporate refocusing programmes on divestiture decisions. Studies of this nature would extend the corporate focus variable set used in this study by following methods employed by Berger and Ofek (1999). Studies would include measures such as the firm's excess value and financial distress (measured by reductions in dividends or potential takeover announcements).

Fifth, studies may also focus only on the effects of changes in legislation related to corporate tax on divestiture decisions. Studies of this nature would investigate how changing corporate tax have increased divestiture activity in South Africa. Finally, studies may also focus only on the effects of leverage as a determinant of divestitures. Studies of this nature would follow methods employed by Nguyen (2013). For example, studies may investigate company balance sheet compositions over extended periods of time and would investigate whether leverage has been reduced on an incremental basis. Such studies could observe leverage ratios 5 years pre the announcement and 5 years post the divestiture announcement using a method analogous to Nguyen (2013).

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6.1 WEBSITES

McGregor BFA I-Net Bridge/IRESS
Researchgate.net
Sharenet.co.za
Zephyr M&A quarterly reports

6.2 SOFTWARE

EViews Version 10 Student Version Lite.
IBM SPSS Version 25
Microsoft Office

7. APPENDICES

I. LITERATURE REVIEW

Table I-A: Findings from prior research (ordered chronologically by year published).

Author	Year published	Country of focus	Sample size	Observation period (sample period covered)	Event window	Results
Hite and Owers	1983	USA	123	1963-1981	(-1;0)	3.3***
Miles and Rosenfeld	1983	USA	55	1963-1980	(0;1)	3.34***
Schipper and Smith	1983	USA	93	1963-1981	(-1;0)	2.84***
Alexander, Benson and Kampmeyer	1984	USA	53	1964-1973	(-1;0)	0.13
Hearth and Zaima	1984		58	1979-1981	101-140	0.0480**
Montgomery, Thomas and Kamath	1984	USA	78	1976-1979	(-12;+12)	0.04
Rosenfeld	1984	USA	35	1963-1981	(-1;0)	5.56***
Jain	1985	USA	1000	1976-1978	(-5;-1)	0.7
Copeland, Lemgruber and Mayers	1987	USA	188	1962-1982	(-1;0)	3.03***
Denning	1988	USA	42	1970-1982	(-6;6)	2.58 (not reported)
Seifert and Rubin	1989	USA	51	1968-1983	(-1;0)	3.26
Afshar, Taffler and Sudarsanam	1992	UK	178	1985-1986	(-1;0)	0.85
Ball, Rutherford and Shaw	1993	USA	39	1968-1990	(-1;0)	2.55(not reported)
Cusatis, Miles and Woolridge	1993	USA	131	1965-1988	12 months	23.1
Vijh	1994	USA	113	1964-1990	(-1;0)	2.90**
Allen, Lummer, McConnell and Reed	1995	USA	94	1962-1991	(-1;0)	2.15***
Michaely and Shaw	1995	USA	9	1981-1988	(-1;1)	3.19(not reported)
Slovin, Sushka and	1995	USA	37	1980-1991	(0;1)	1.32**

Ferraro						
Blount and Davidson	1996	South Africa	N/A	N/A	(-60;-1)	1.8
Johnson, Klein and Thibodeaux	1996	USA	104	1975-1988	(-1;0)	3.96***
Seward and Walsh	1996	USA	78	1972-1987	(-1;0)	2.6***
Cho and Cohen	1997	USA	50	1983-1987	(Year-4;Year 0)	.-1.8 (Year +1)
Daley, Mehrotra and Sivakumar	1997	USA	85	1975-1991	(-1;0)	3.4***
Berger and Ofek	1999	USA	404 announcements (107 diversified firms)	1984-1993	(-1;+1)	0.073*
Desai and Jain	1999	USA	155	1975-1991	12 months	7.69
Desai and Jain	1999	USA	144	1975-1991	(-1;1)	3.84***
Krishnaswami and Subramaniam	1999	USA	118	1978-1993	(-1;1)	3.28***
Mulherin and Boone	2000	USA	106	1990-1999	(-1:1)	4.51***
Murray	2000	UK	25	1992-1998	(-1;1)	-0.19
McConnell, Ozbilgin and Wahal	2001	USA	80	1989-1995	12 months	13.48
Schauten, Steenbeek and Wycisk	2001	UK	23	1989-1996	(-1;1)	2.13 (not reported)
Haynes, Thompson and Wright	2002	UK	132	1985-1993		
Kirchmaier	2003	Western Europe	48	1989-1999	(-1;1)	5.4***
Maxwell and Rao	2003	USA	79	1976-1997	(0;1)	3.59***
Bhana	2004	South Africa	47	1988-1999	12 months	23.2
Veld and Veld-Merkoulova	2004	Western Europe	156	1987-2000	(-1;1)	2.62***
Veld and Veld-	2004	Western	105	1987-2000	12 months	0.65

Merkoulova		Europe				
Bhana	2006	South Africa	58	1995-2001	(-5;0)	3.37
Sin and Ariff	2006	Malaysia	85	1986-2002	(-1;1)	1.80*
Sudarsanam and Qian	2007	Europe	157	1987-2005	(-1;1)	4.82***
Sundarsanam and Qian	2007	Europe	129	1987-2002	12 months	-0.06
Lee and Lin	2008	UK	376	1993-1997	(-1;0)	1.38
Lee and Lin	2008	UK	376	1993-1997	12 months	-7.1
Lehtonen	2008	Europe	120	1994-2006	(-1;1)	1.83***
Rozing	2008	USA	207	1995-2004	3 years	
Veld and Veld-Merkoulova	2008	USA	91	1995-2002	(-1;1)	3.07***
Fogh	2009	Europe (Denmark)	61	2003-2009	(-1;0)	1.79
Hillier, McColgan and Werema	2009	UK	413	1993-2000	(-1;1)	1.125
Lee and Madhavan	2010		94 studies	Prior studies		0.11**
Owen, Shi and Yawson	2010	USA	797	1997-2005	(-1;+1)	1.570***
Zakaria and Arnold	2010	Malaysia	36	1980-2011	(-1;1)	4.99
Zakaria and Arnold	2010	Malaysia	36	1980-2011	12 months	-7.25
Sun	2012	Taiwan	157	1995-2004	(-1;1)	0.243
Nguyen	2013	Europe (France)	775	1990-2010	(-1;1)	0.138
Nichols, Rosenberg, Majoni & Mukanjari	2014	South Africa	44	1995-2001	-250	-0.88
Dahlum and Tai	2015	USA	6699	1995-2014	(-1;0)	1.25
Joosub, Coldwell and Jordan	2017	South Africa	27	2002-2011	(0,)	-12.47

II. DATA AND METHODOLOGY

Table II-A: Sample firms and their control firm

#	Selling Company	Industry	Company disposed of	Declaration Date	Control Firm
1	Acumen Holdings	Educational Services	Adcorp Holdings	11/07/2000	Advtech
2	Anglo American PLC	Mining & Industrials	Mondi PLC and Ltd	06/06/2007	African Rainbow Minerals
3	AVI Ltd	Consumer Discretionary – Food and Beverages	Consol Ltd	01/17/2005	RCL Foods
4	Barloworld	General Industrials	Pretoria Portland Cement	5/15/2007	Invicta Holdings
5	Barloworld	General industrials	Freeworld Coatings	11/8/2007	Invicta Holdings
6	Bolton Industrial Holding	General Industrials (Bulk Transport, footwear manufacturing	Cargo Carriers	11/10/2000	Imperial Holdings
7	Cadbury Schweppes	Food and Beverages	Amalgamated Beverage Ind.	10/30/2000	Clover Industries
8	Comparex	Technology Hardware	Dimension Data	2/28/2000	Allied Electronics (Altron)
9	Computer Configuration holdings	Technology and IT services	Mgx Holdings Ltd	3/8/2001	Alviva Holdings
10	Control Instruments	Technology and IT services	TELIMATRIX LTD	11/7/2007	Alviva Holdings
11	Fintech	Office Electronics	National Data Systems, Alcatel and XEROX South Africa to USKO	11/17/2000	Allied Electronics (Altron)
12	Gencor	Mining & industrials	Sell-off Impala Platinum	4/1/2003	African Rainbow Minerals

13	Gold Fields Ltd	Mining & Industrials	Sibanye Gold	1/10/2013	Harmony Gold
14	Imperial Holdings	Bulk Transport services	Eqstra Holdings	3/25/2008	Value Logistics
15	IProp	Real Estate	Properties to IFour	5/9/2002	Growthpoint Properties
16	Johnnic Holdings	Media, communication entertainment and casinos	MTN Group	5/12/2003	Caxton Printers and Publishers
17	Kunene Technologies	Technology Hardware	Siltek	8/15/2000	Alviva Holdings
18	Kunene Technologies	Technology Hardware	Grintek Ltd	3/15/2002	Allied Electronics (Altron)
19	Kirchmann-Hurry Prop	Real Estate			IProp Holdings
20	Labat Africa	Transport, logistics, road, rail, associated electronic and engineering components.	Total Client Service	2/29/2008	EOH Holdings
21	Micor	Bulk Transport (container leasing, owning) services	Dna Supply Chain Investm	9/7/2000	Imperial Holdings
22	Mobile Industries	Owning, leasing, managing and reselling marine cargo containers worldwide, as well as related financing activities.	Trencor Ltd	11/22/2010	Value Logistics
23	Mondi	Paper & packaging	MPact Ltd	5/31/2011	Sappi Ltd
24	Moresport	Retailer of primarily sports equipment	Total Sports business	8/21/2000	Mr Price Group
25	Mvelaphanda Group	Mining & Industrials	HEALTH STRATEGIC INV LTD	6/25/2010	Assore Ltd
26	Mvelaphanda Resources	Mining & Industrials	Gold Fields	12/15/2010	Assore Ltd
27	Mvelaphan	Mining & Industrials	Northam	2/9/2011	Assore Ltd

	da Resources		Platinum Ltd		
28	Nictus Ltd	Through its subsidiary, generally focused on furniture and equipment	Nictus Holdings NM (Namibian business)	8/10/2012	Afrocentric Investments
29	Pentacom Holdings	Specialist Data Reticulation, Networking, Environmental Control and Information Technology Systems Integration	IFusion	4/10/2000	EOH Holdings
30	Pepkor	Clothing Retailer	Tradehold Ltd	10/6/2000	Truworths International
31	Randgold Exploration	Mining & Industrials	Sale of subsidiary to Anglo Gold	04/05/2000	Harmony Gold
32	Randgold Exploration	Mining & Industrials	JCI Ltd	06/07/2010	Harmony Gold
33	Real Africa Holdings	Entertainment, media and casinos	African Life Insurance	06/30/2000	Sun International/South Africa
34	Redefine Properties	Real Estate	Arrowhead Properties	10/5/2011	Growthpoint Properties
35	Remgro Ltd	General Industrials	Transhex Ltd	6/22/2010	Afrocentric Investments
36	Remgro Ltd	General Industrials	Impala Ltd	6/1/2012	Afrocentric Investments
37	Simmer and Jack Mines	Mining & Industrials	Village Main Reef	3/14/2011	Harmony Gold
38	Streamworks	Industrial IT & Supply chain management	Dna Supply Chain Investm	7/11/2001	EOH holdings
39	Telkom SOC SA	Quasi government Fixed-line operator	Vodacom Ltd	3/4/2009	Cognition Holdings
40	Tiger Brands	Food & Beverages	Adcock Ingram	7/22/2008	Tongaat-Hulett
41	Tiger Brands	Food & Beverages	The Spar Group	9/23/2004	AVI Ltd
42	Tiger Wheels Ltd	Automotive – Auto Parts	Tiger Automotive	12/6/2006	Metair Investments

43	Tongaat Hulett Group Limited	Food & Beverages	Hulamin Ltd	5/10/2007	Astral Foods
44	UCS Group	IT business	Business Connexion	5/6/2011	EOH Holdings
45	Western Areas	Mining & Industrials	JCI Ltd	10/31/2002	Anglo American
46	Wooltru	Medical Aid resolutions	Consolidated News Agencies (CNA)	15/02/2001	Metrofile Holdings

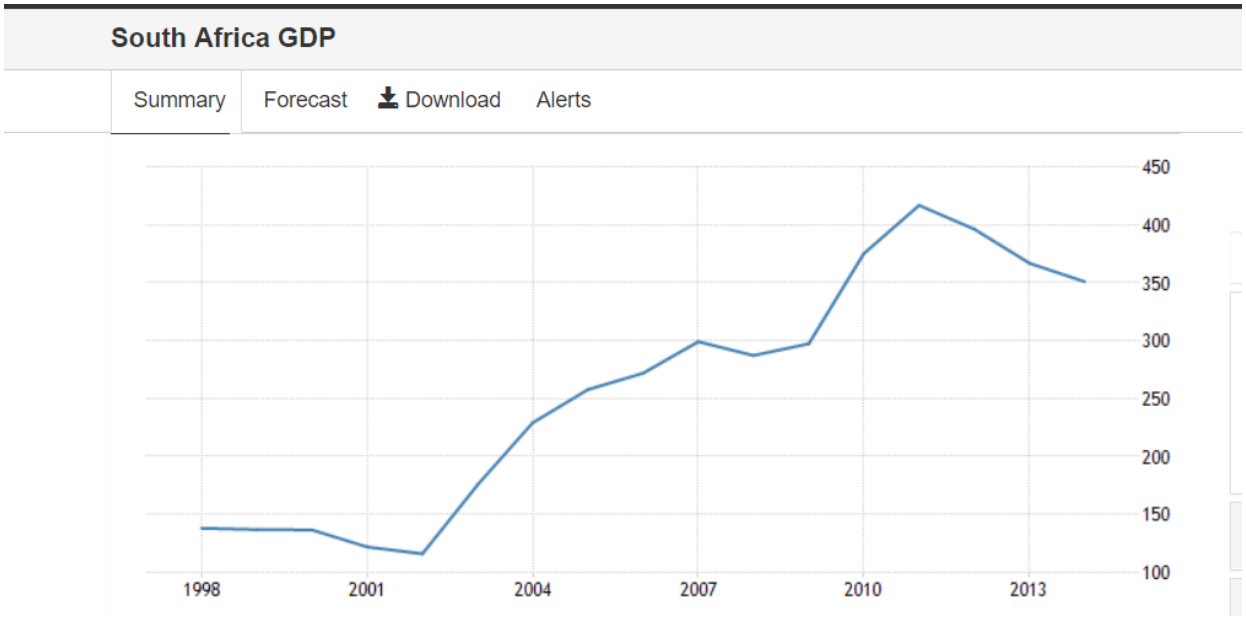
Table II-B: Variable Definition and Sources

Model characteristics	**Definition**	**Source**
Abnormal Returns	Calculated using the market model. Market model parameters are estimated over days (-151;-31), using Ordinary Least Squares	Share prices obtained from I-Net Bridge/IRESS terminal and JSE All Share prices received from I-Net Bridge
$CAR_{t = -2;+2}$	5 day cumulative abnormal return (%),	Calculated for each security based on the formula (see section 3.3)
Corporate Focus		
Sales Growth	Sales growth is determined as the growth in revenue between 2 years preceding the announcement and the year prior to the announcement	I-Net Bridge/IRESS terminal, Financial Statements & Datastream
CEO Turnover	Dummy variable. If firm changed CEO in period of 12 months prior to the announcement and 1 month post the announcement. A value of 1 is assigned if true and 0 if otherwise.	Financial Statements and JSE Sens announcements
Efficiency Hypothesis		
ROA	Return on Assets = Earnings Before Interest, Taxation, Depreciation and Amortisation in year *t-1* divided by Book value of Total Assets in year *t-*	I-Net Bridge/IRESS terminal & Datastream

	1	
ROE	Return on Equity = Profit After Tax (Net income) in year *t-1* divided by Total Equity in year *t-1*	I-Net Bridge/IRESS terminal & Datastream
The Size Effect		
LnTA	Natural Logarithm of the book value of Total Assets in year *t-1*	I-Net Bridge/IRESS terminal & Datastream
The Leverage Effect		
Debt to Assets	Long Term Debt t-1 divided by Total Net Assets t-1 t	I-Net Bridge/IRESS terminal & Datastream
Debt to Equity	Long-Term Debt t-1 divided by Total Equity t-1	I-Net Bridge/IRESS terminal & Datastream
Current Ratios	A measure of short-term financial health. Measured as a Ratio of Current Assets to Current Liabilities in year *t-1*	I-Net Bridge/IRESS terminal & Datastream
Interest Coverage Ratio	Interest Expense divided by Profit before Interest and Tax	I-Net Bridge/IRESS terminal & Datastream
Robustness Tests		
Buy and Hold Returns	Returns as per the Buy and Hold Return method in Event Study methodology	I-Net Bridge/IRESS terminal & Datastream

II-C: South African Economic Cycle

Figure 2. South Africa Economic Cycle (GDP)



Source: Trading Economics (World Bank). Available at: https://tradingeconomics.com/south-africa/gdp

III. RESULTS AND ANALYSIS

III-A: Determinants of Divestitures: Test for significance - sample versus control firm.

$$t = \frac{\bar{x}_{sp} - \bar{x}_{cp}}{se\ (\bar{x}_{sp} - \bar{x}_{cp})} \tag{3.9}$$

Where:

$$se\left(\bar{x}_{sp} - \bar{x}_{cp}\right) = s\ x \sqrt{\frac{1}{n_{sp}} + \frac{1}{n_{cp}}} \tag{3.9.1}$$

Where:

$$s = \sqrt{\frac{(n_{sp}-1)s_{sp}^2 + (n_{cp}-2)s_{cp}^2}{(n_{sp} + n_{cp} - 2)}} \tag{3.9.2}$$

Where:

- $\bar{x}_{sp}$ = mean returns for portfolio of sample firms
- $\bar{x}_{cp}$ = mean returns for portfolio of control firms
- s^2_{sp} = variance of portfolio of sample firms
- s^2_{cp} = variance of portfolio of control firms
- n_{sp} = number of observations in portfolio of sample firms
- n_{cp} = number of observations in portfolio of control firms

III-B: Logit regression outputs: Sale as the dependent variable (SPSS)

Table: III-B.1: Model 1

Case Processing Summary

		N	Marginal Percentage
Sale	0	46	50.0%
	1	46	50.0%
Valid		92	100.0%
Missing		0	
Total		92	
Subpopulation		92[a]	

a. The dependent variable has only one value observed in 92 (100.0%) subpopulations.

Model Fitting Information

Model	Model Fitting Criteria -2 Log Likelihood	Likelihood Ratio Tests Chi-Square	Df	Sig.
Intercept Only	127.539			
Final	95.762	31.777	9	.000

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	81.891	82	.483
Deviance	95.762	82	.142

Pseudo R-Square	
Cox and Snell	.292
Nagelkerke	.389
McFadden	.249

Parameter Estimates

Sale[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	95% Confidence Interval for Exp(B) Upper Bound
0	Intercept	-.043	1.800	.001	1	.981			
	Sales growth	-.003	.004	.426	1	.514	.997	.988	1.006
	CEO Turnover	-2.369	1.226	3.735	1	.053	.094	.008	1.034
	ROA	.023	.018	1.592	1	.207	1.023	.988	1.060
	ROE	.546	1.068	.262	1	.609	1.727	.213	13.998
	Debt to Equity	-.108	.109	.971	1	.324	.898	.725	1.112
	Debt to Assets	1.900	1.871	1.031	1	.310	6.686	.171	261.756
	Current Ratio	-.296	.148	3.969	1	.046	.744	.556	.995
	Interest-coverage ratio	.270	.371	.530	1	.467	1.310	.633	2.709
	Ln(TA)	.020	.121	.028	1	.866	1.021	.806	1.293

a. The reference category is: 1.

Likelihood Ratio Tests

Effect	Model Fitting Criteria -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests Chi-Square	df	Sig.
Intercept	95.763	.001	1	.981
Sales growth	98.074	2.312	1	.128
CEO Turnover	101.094	5.332	1	.021
ROA	97.511	1.749	1	.186
ROE	96.196	.434	1	.510
Debt to Equity	97.169	1.407	1	.236
Debt to Assets	97.831	2.069	1	.150
Current Ratio	104.123	8.361	1	.004
Interest-coverage ratio	96.280	.518	1	.472
Ln(TA)	95.790	.028	1	.866

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Table III-B.2: Model 2

Case Processing Summary

		N	Marginal Percentage
Sale	0	46	50.0%
	1	46	50.0%
Valid		92	100.0%
Missing		0	
Total		92	
Subpopulation		87[a]	

a. The dependent variable has only one value observed in 87 (100.0%) subpopulations.

Model Fitting Information

Model	Model Fitting Criteria -2 Log Likelihood	Likelihood Ratio Tests Chi-Square	Df	Sig.
Intercept Only	127.539			
Final	106.690	20.849	5	.001

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	89.075	81	.253
Deviance	106.690	81	.029

Pseudo R-Square

Cox and Snell	.203
Nagelkerke	.270
McFadden	.163

Parameter Estimates

Sale[a]		B	Std. Error	Wald	Df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
0	Intercept	-.500	1.621	.095	1	.758			
	CEO Turnover	-2.370	1.103	4.618	1	.032	.094	.011	.812
	ROA	.027	.013	4.490	1	.034	1.027	1.002	1.054
	Debt to Equity	-.128	.099	1.656	1	.198	.880	.724	1.069
	Debt to Assets	2.617	1.823	2.061	1	.151	13.692	.384	487.551
	Ln(TA)	-.005	.111	.002	1	.963	.995	.800	1.237

a. The reference category is: 1.

Likelihood Ratio Tests

Effect	Model Fitting Criteria -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests Chi-Square	Df	Sig.
Intercept	106.785	.095	1	.758
CEO Turnover	113.927	7.237	1	.007
ROA	113.189	6.499	1	.011
Debt to Equity	109.249	2.559	1	.110
Debt to Assets	110.343	3.653	1	.056
Ln(TA)	106.692	.002	1	.963

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

Table III-B.3: Model 3

Case Processing Summary

		N	Marginal Percentage
Sale	0	46	50.0%
	1	46	50.0%
Valid		92	100.0%
Missing		0	

Total	92	
Subpopulation	85[a]	

a. The dependent variable has only one value observed in 85 (100.0%) subpopulations.

Model Fitting Information

Model	Model Fitting Criteria -2 Log Likelihood	Likelihood Ratio Tests		
		Chi-Square	Df	Sig.
Intercept Only	127.539			
Final	113.927	13.612	4	.009

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	86.140	80	.299
Deviance	113.927	80	.008

Pseudo R-Square

Cox and Snell	.138
Nagelkerke	.183
McFadden	.107

Parameter Estimates

Sale[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
0	Intercept	.255	1.579	.026	1	.872			
	ROA	.028	.013	4.834	1	.028	1.028	1.003	1.054
	Debt to Equity	-.133	.100	1.782	1	.182	.875	.719	1.064
	Debt to Assets	3.186	1.835	3.014	1	.083	24.202	.663	883.445
	Ln(TA)	-.076	.107	.504	1	.478	.927	.751	1.143

a. The reference category is: 1.

Likelihood Ratio Tests

Effect	Model Fitting Criteria -2 Log Likelihood of Reduced Model	Likelihood Ratio Tests Chi-Square	df	Sig.
Intercept	113.953	.026	1	.872
ROA	120.916	6.989	1	.008
Debt to Equity	116.520	2.593	1	.107
Debt to Assets	118.986	5.059	1	.024
Ln(TA)	114.438	.511	1	.475

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

III-C: Alternative Event Windows

III-C.1: Alternative Event Window 1 (-5;0)

Table III-C.1: Empirical results for 6-day event window

	Cumulative Abnormal Returns and Average Abnormal Returns:			***Robustness Test: Buy-And-Hold Returns***		
Day	**AAR**	**Test statistic**	**CAR**	**Daily Average BHAR**	**Test statistic**	**BHAR**
-5	-0.4984%	-0.86	-0.4984%	-0.3133%	-0.53	-0.3133%
-4	-0.7009%	-1.21	-1.1993%	-0.6121%	-1.04	-0.9253%
-3	0.9564%	1.65	-0.2429%	1.1570%	1.96**	0.2316%
-2	0.8030%	1.38	0.5601%	0.7189%	1.22	0.9505%
-1	1.0794%	1.86*	1.6396%	2.0126%	3.41***	2.9631%
0	**0.5785%**	**1.00**	**2.2180%**	**0.7779%**	**1.32**	**3.7410%**

*;**;*** denotes significance at the 10%, 5% and 1% respectively. Statistical significance is based on 120 degrees of freedom for the estimation window between -151 and -31. The method for determining the test statistic follows Brown and Warner (1980). This method is also consistent with Miles and Rosenfeld (1983;) and Bhana (2006).

III-C.2: Alternative Event Window 2 (-1;+1)

Table III-C.2: Empirical results for 3-day event window

	Cumulative Abnormal Returns and Average Abnormal Returns:			***Robustness Test: Buy-And-Hold Returns***		
Day	**AAR**	**Test statistic**	**CAR**	**Daily Average BHAR**	**Test statistic**	**BHAR**
-1	1.0794%	1.86*	1.0794%	2.0126%	3.41***	2.0126%
0	**0.5785%**	**1.00**	**1.6579%**	**0.7779%**	**0.32**	**2.7905%**
+1	-0.6952%	-1.20	0.9628%	-0.4923%	-0.83	2.2982%

*;**;*** denotes significance at the 10%, 5% and 1% respectively. Statistical significance is based on 120 degrees of freedom for the estimation window between -151 and -31. The method for determining the test statistic follows Brown and Warner (1980). This method is also consistent with Miles and Rosenfeld (1983;) and Bhana (2006).

III-C.3: Alternative Event Window 3 (-10;+10)

Table III-C.3: Empirical results for 21-day event window

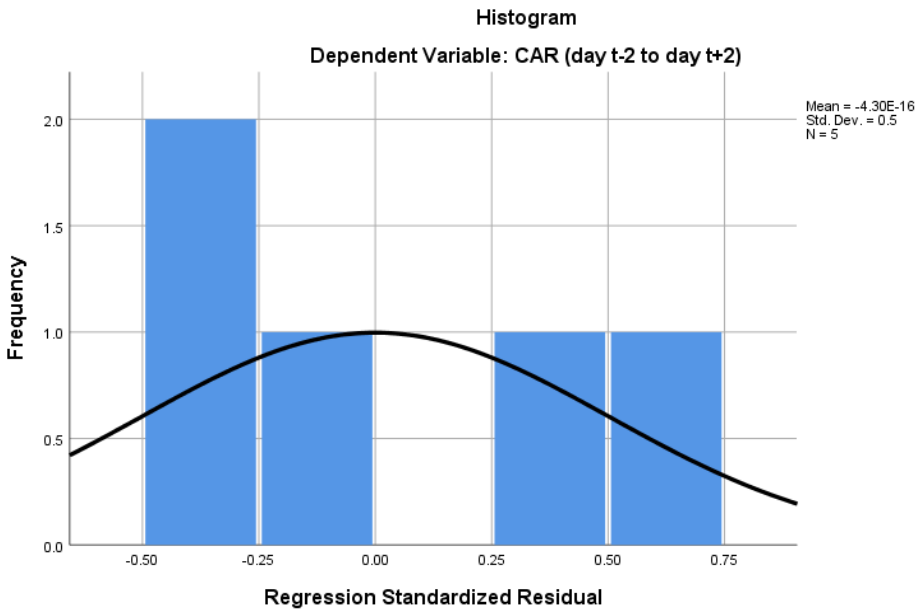
	Cumulative Abnormal Returns and Average Abnormal Returns:			***Robustness Test: Buy-And-Hold Returns***		
Day	**AAR**	**Test statistic**	**CAR**	**Daily Average BHAR**	**Test statistic**	**BHAR**
-10	0.1243%	0.21	0.1243%	0.1856%	0.31	0.1856%
-9	0.1531%	0.26	0.2774%	0.2321%	0.39	0.4177%
-8	0.2859%	0.49	0.5633%	0.2899%	0.49	0.7075%
-7	0.2487%	0.43	0.8120%	0.5757%	0.98	1.2832%
-6	0.4484%	0.77	1.2604%	0.5565%	0.94	1.8397%
-5	-0.4984%	-0.86	0.7620%	-0.3133%	-0.53	1.5264%
-4	-0.7009%	-1.21	0.0612%	-0.6121%	-1.04	0.9143%
-3	0.9564%	1.65	1.0176%	1.1570%	1.96*	2.0713%
-2	0.8030%	1.38	1.8205%	0.7189%	1.22	2.7902%
-1	1.0794%	1.86*	2.9000%	2.0126%	3.41***	4.8028%
0	**0.5785%**	**1.00**	**3.4785%**	**0.7779%**	**1.32**	**5.5807%**

+1	-0.6952%	-1.20	2.7833%	-0.4923%	-0.83	5.0884%
+2	-1.6341%	-2.82***	1.1492%	-1.4705%	-2.49***	3.6180%
+3	-0.4794%	-0.83	0.6699%	-1.2742%	-2.16**	2.3438%
+4	-1.8779%	-3.24***	-1.2081%	-2.0072%	-3.40***	0.3367%
+5	-2.7692%	-4.77***	-3.9773%	-2.3640%	-4.01***	-2.0273%
+6	-0.0141%	-0.02	-3.9914%	-0.0211%	-0.04	-2.0485%
+7	0.8481%	1.46	-3.1433%	0.8315%	1.41	-1.2170%
+8	-0.6881%	-1.19	-3.8314%	-0.8475%	-1.44	-2.0644%
+9	-0.3556%	-0.61	-4.1870%	-0.2999%	-0.51	-2.3644%
+10	1.1722%	2.02**	-3.0148%	1.1062%	1.88*	-1.2581%

*;**;*** denotes significance at the 10%, 5% and 1% respectively. Statistical significance is based on 120 degrees of freedom for the estimation window between -151 and -31. The method for determining the test statistic follows Brown and Warner (1980). This method is also consistent with Miles and Rosenfeld (1983;) and Bhana (2006).

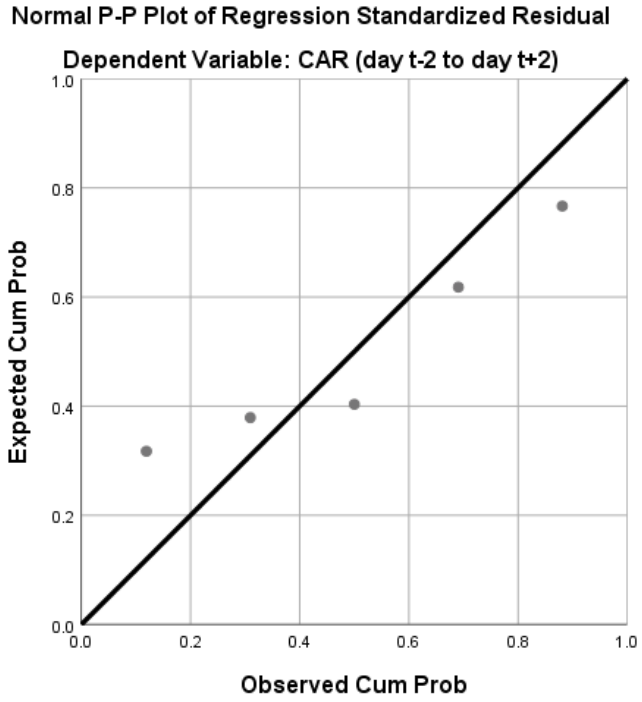
III-D: SPSS OLS Regression graphical outputs of 5-day (-2;+2) CARs

Figure 3. Histogram of 5-day (-2;+2) CARs



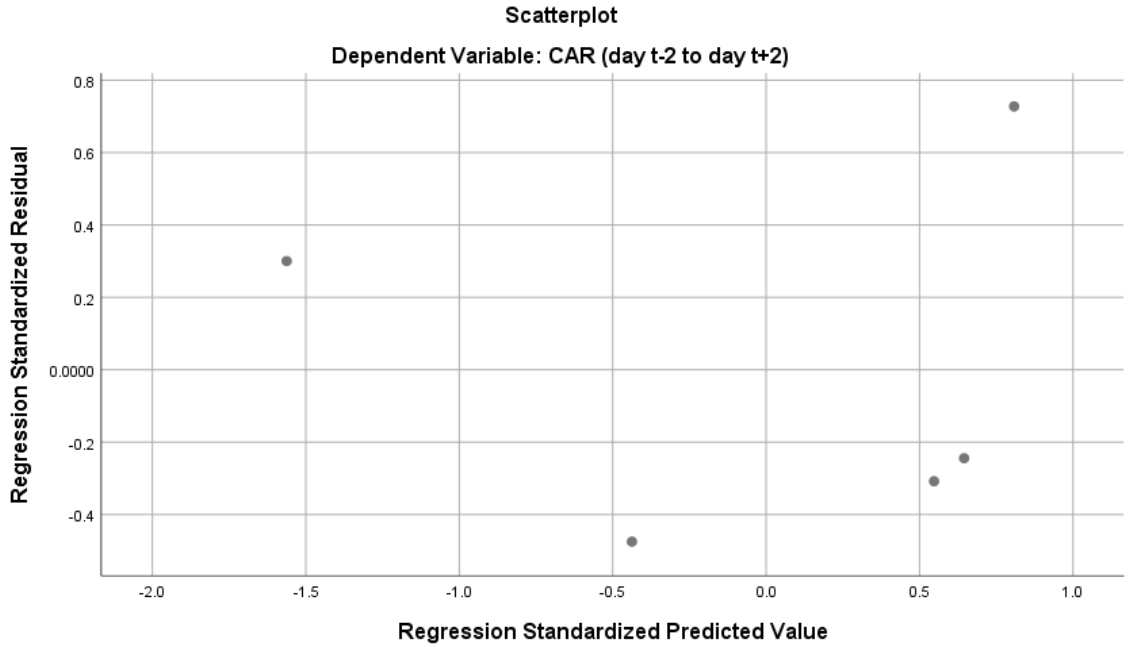
Source – IBM SPSS Version 25.

Figure 4. Normal P-P Plot of Regression Standardised Residual of 5-day (-2;+2) CARs.



Source: IBM SPSS Version 25**.**

Figure 5. Scatterplot of 5-day (-2;+2) CARs



Source – IMB SPSS Version 25.

III-E: Determinants of divestiture returns: EViews - Regression model outputs

Figure 6. Model 1 - All determinants.

Dependent Variable: CARS
Method: Least Squares
Date: 07/26/18 Time: 12:57
Sample (adjusted): 1 5
Included observations: 5 after adjustments
Huber-White-Hinkley (HC1) heteroskedasticity consistent standard errors and covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009350	0.014689	0.636512	0.6391
ROA	-0.004748	0.003922	-1.210472	0.4396
DEBT_TO_ASSETS	-0.051007	0.013419	-3.801111	0.1638
LN_TA_	0.000904	0.000981	0.921876	0.5259

R-squared	0.943009	Mean dependent var	0.014087
Adjusted R-squared	0.772034	S.D. dependent var	0.009296
S.E. of regression	0.004439	Akaike info criterion	-8.006428
Sum squared resid	1.97E-05	Schwarz criterion	-8.318878
Log likelihood	24.01607	Hannan-Quinn criter.	-8.845013
F-statistic	5.515498	Durbin-Watson stat	2.441257
Prob(F-statistic)	0.301047	Wald F-statistic	7.170919
Prob(Wald F-statistic)	0.266346		

Source : EViews Student Version 10 Student Version Lite.

Figure 7. Model 2 - ROA as the only explanatory variable.

Dependent Variable: CARS
Method: Least Squares
Date: 07/26/18 Time: 13:15
Sample (adjusted): 1 5
Included observations: 5 after adjustments
Huber-White-Hinkley (HC1) heteroskedasticity consistent standard errors and covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011871	0.004746	2.501388	0.0876
ROA	-0.010750	0.007105	-1.512985	0.2275

R-squared	0.292940	Mean dependent var	0.014087
Adjusted R-squared	0.057254	S.D. dependent var	0.009296
S.E. of regression	0.009026	Akaike info criterion	-6.288215
Sum squared resid	0.000244	Schwarz criterion	-6.444439
Log likelihood	17.72054	Hannan-Quinn criter.	-6.707507
F-statistic	1.242924	Durbin-Watson stat	1.770657
Prob(F-statistic)	0.346177	Wald F-statistic	2.289124
Prob(Wald F-statistic)	0.227490		

Source: EViews Student Version 10 Student Version Lite.

Figure 8. Model 3 - Debt to Assets as the only explanatory variable.

Dependent Variable: CARS
Method: Least Squares
Date: 07/26/18 Time: 13:18
Sample (adjusted): 1 5
Included observations: 5 after adjustments
Huber-White-Hinkley (HC1) heteroskedasticity consistent standard errors and covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.022375	0.002015	11.10603	0.0016
DEBT_TO_ASSETS	-0.047534	0.006496	-7.317596	0.0053

R-squared	0.874530	Mean dependent var	0.014087
Adjusted R-squared	0.832707	S.D. dependent var	0.009296
S.E. of regression	0.003802	Akaike info criterion	-8.017265
Sum squared resid	4.34E-05	Schwarz criterion	-8.173489
Log likelihood	22.04316	Hannan-Quinn criter.	-8.436557
F-statistic	20.91014	Durbin-Watson stat	1.531193
Prob(F-statistic)	0.019624	Wald F-statistic	53.54721
Prob(Wald F-statistic)	0.005271		

Source – EViews Student Version 10 Student Version Lite.

Figure 9. Model 4 - Firm Size as the only explanatory variable

Dependent Variable: CARS
Method: Least Squares
Date: 07/26/18 Time: 13:20
Sample (adjusted): 1 5
Included observations: 5 after adjustments
Huber-White-Hinkley (HC1) heteroskedasticity consistent standard errors and covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.035467	0.026312	1.347945	0.2704
LN_TA_	-0.001528	0.001838	-0.831051	0.4669

R-squared	0.210880	Mean dependent var	0.014087
Adjusted R-squared	-0.052160	S.D. dependent var	0.009296
S.E. of regression	0.009536	Akaike info criterion	-6.178412
Sum squared resid	0.000273	Schwarz criterion	-6.334636
Log likelihood	17.44603	Hannan-Quinn criter.	-6.597704
F-statistic	0.801705	Durbin-Watson stat	1.527597
Prob(F-statistic)	0.436561	Wald F-statistic	0.690646
Prob(Wald F-statistic)	0.466906		

Source – EViews Student Version 10 Student Version Lite.

III-F: Statistical tests for Determinants of Divestiture Returns

$$t = \frac{\bar{x}_1 - \bar{x}_2}{se\ (\bar{x}_1 - \bar{x}_2)} \tag{3.10}$$

Where:

$$se\ (\bar{x}_1 - \bar{x}_2) = s \text{ x} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}} \tag{3.10.1}$$

Where:

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 2)s_2^2}{(n_1 + n_2 - 2)}} \tag{3.10.2}$$

Where:

- $\bar{x}_1 =$ cumulative abnormal returns for the 5 day event window $(-2; +2)$for subsample 1
- $\bar{x}_2 =$ cumulative abnormal returns for the 5 day event window $(-2; +2)$for subsample 1
- $s_1^2 =$ variance of the 5 day event window $(-2; +2)$ for subsample 1
- $s_2^2 =$ variance of the 5 day event window $(-2; +2)$ for subsample 1
- n_1 = number of observations in subsample 1 for the 5 day event window $(-2; +2)$
- n_2 = number of observations in subsample 2the 5 day event window $(-2; +2)$